Exploring the Relationship between Persecutory Ideation and Subjective Wellbeing

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I dedicate this work to my Nana and Papa, Ann and John Bell. I couldn't have had better grandparents if I had knitted you myself. Thank you for everything. You are both dearly loved and missed always.

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Contents

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Thesis Overview

Subjective wellbeing (SWB) refers an individual's perception of their psychological, emotional and social wellbeing (Keyes, 2002). Persecutory ideation refers to thoughts that an individual will come to harm due to the deliberate intention of other people (Freeman & Garety, 2000). These thoughts are common in the general population. Persecutory ideation has been found to be experienced by up to 18.6% of people per year (Freeman et al., 2011). Persecutory delusions are experienced by 90% of people experiencing first episode psychosis (Moutoussis, Williams, Dayan & Bentall, 2007) and have been associated with distress and poorer clinical outcomes (Freeman, 2016).

Several theories of the development and maintenance of persecutory ideation have been proposed. Social factors such as insecure attachment, neglect and physical abuse have been found to be associated with persecutory ideation in clinical and non-clinical samples (Bentall, Wickham, Shevlin & Varese, 2012; Pickering, Simpson & Bentall, 2008; Sitko, Bentall, Shevlin & Sellwood, 2014). Cognitive mechanisms have also been found to be associated with persecutory ideation, including reasoning biases (Garety & Freeman, 1999) and worry (Freeman et al., 2012).

The overarching aim of the present thesis is to provide a thorough review and empirical investigation of the complex relationship between persecutory ideation and SWB.

Chapter one

The first chapter of this thesis is a systematic review that aimed to investigate the relationship between persecutory ideation and SWB. Due to the variation in terminology used within the literature, studies investigating the relationship between persecutory ideation and the related concept of quality of life (QoL) are also included in the review. In particular, the review sought to answer whether people with higher levels of persecutory ideation have

lower levels of SWB. Additionally, it considered whether the relationship between persecutory ideation and both SWB and QoL differs between people whose persecutory ideation is classified as "delusional" and those with lower levels of persecutory ideation. Lastly, it sought to identify variables that influence this relationship.

Overall, a moderate negative correlation was found between persecutory ideation and both SWB and QoL, in people with and without a history of mental health difficulties. There was some evidence that this relationship may be stronger in people experiencing non-clinical levels of persecutory ideation, compared to individuals experiencing psychosis. A dearth of literature investigating psychological mechanisms that influence the relationship between persecutory ideation and SWB or QoL was found.

Chapter two

The second chapter of this thesis is an empirical paper that aimed to investigate the psychological factors that influence the relationship between persecutory ideation and SWB in the general population. It considered the role of persecution deservedness (believing that perceived persecution is deserved), cognitive fusion (being entangled with one's thoughts and believing them as fact) and sense of coherence (feeling one's environment is understandable, manageable and meaningful) in this relationship. A new conceptual model of these factors was proposed and tested.

A negative relationship between persecutory ideation and SWB was found. Sense of coherence was found to predict SWB, beyond the level of persecutory ideation. Additionally, people who have accessed mental health services had higher levels of persecutory ideation and lower levels of SWB than people with no history of mental health difficulties. No significant interaction effects were found and therefore the findings did not support the proposed conceptual model.

Overall conclusions

There is strong evidence that there is a negative relationship between persecutory ideation and both SWB and QoL, in both clinical and non-clinical samples. It may be beneficial to consider specific psychological interventions to reduce persecutory ideation in people accessing mental health services, regardless of their diagnosis. Wider interventions could be considered to improve SWB and QoL related to persecutory ideation in the general population. These may target experiences and mechanisms that have been found to be associated with the development of persecutory ideation. Further research is needed to investigate other psychological factors that may influence the relationship between persecutory ideation and both SWB and QoL. Sense of coherence is one factor that has been found to be related to SWB, so may be helpful to consider when providing psychological interventions to individuals experiencing persecutory ideation.

Targeted journal

The empirical paper was prepared for submission to Psychology and Psychotherapy, in line with the author guidelines (Appendix A). This journal was selected as it focuses on wellbeing and psychological aspects of mental health difficulties.

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Chapter One

Subjective Wellbeing and Quality of Life in the Context of Persecutory Ideation: A Systematic Review

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Abstract

Purpose: Persecutory ideation varies in severity and is common in the general population. Increasingly, research has considered the impact of psychological difficulties on the overlapping concepts of subjective wellbeing (SWB) and quality of life (QoL). This review aimed to investigate the relationship between persecutory ideation and both SWB and QoL. It aimed to consider whether there are differences for individuals with clinically significant levels of persecutory ideation compared to the general population, and to identify additional factors that may influence this relationship. The protocol was registered with PROSPERO, CRD42020148743. **Methods:** Systematic searches were completed using online databases (PsychINFO, Web of Science, Scopus, Embase & Pubmed) and hand searching. Quantitative peer-reviewed studies with adult participants and validated measures were included. In total, 24 datasets, including 13331 participants, reported across 30 papers were identified. Critical appraisal using the AXIS tool and a narrative synthesis was completed. A meta-analysis was conducted with nine studies investigating the correlation between persecutory ideation and QoL. **Results:** A moderate negative relationship was found between persecutory ideation and both SWB and QoL in clinical and non-clinical samples. There was some evidence that this relationship was stronger in non-clinical samples; however, few studies directly compared populations and there was dearth of information on potential moderating and mediating factors. **Conclusions:** Persecutory ideation may be important to consider, to improve SWB and QoL for individuals accessing mental health services, regardless of diagnosis. Further research is needed to investigate other psychological factors that may influence this relationship.

Introduction

Terminology

Persecutory beliefs are beliefs that an individual is currently experiencing, or will experience, physical, psychological or social harm, due to the deliberate intention of other people (Freeman & Garety, 2000). There is evidence that persecutory beliefs exist on a continuum of severity and are common in the general population (Elahi, Algorta, Varese, McIntyre & Bentall, 2017; Bebbington et al., 2013). When these beliefs are based on incorrect inferences of reality and sustained despite the beliefs of others, they are referred to as *persecutory delusions* (World Health Organization [WHO], 2018). Persecutory delusions can lead to emotional distress, hospital admission and social withdrawal (Freeman, 2016).

Various terms have been used to describe this phenomenon, both in clinical and nonclinical populations. There is debate around the use of the term *delusions* and how qualitatively different these are from other strongly held beliefs (Bentall, Corcoran, Howard, Blackwood & Kinderman, 2001; British Psychological Society [BPS], 2017).

Persecutory delusions have been considered a symptom of a mental illness, such as *schizophrenia* (WHO, 2018). However, the research regarding the diagnostic category of schizophrenia and its validity has been varied and unclear (Bentall, Jackson & Pilgrim, 1988). The term *psychosis* has increasingly been used to describe these experiences, including persecutory ideation and hearing voices (Schizophrenia Commission, 2012). This has been considered preferable, in part due to the significant level of stigma associated with the term schizophrenia. This has led to the development of targeted psychological interventions and techniques to support individuals with specific experiences, such as persecutory ideation (Freeman et al., 2015; Morrison, Renton, Dunn, Williams & Bentall, 2004).

The term *paranoia* has been used more broadly, including to describe ordinary suspiciousness, persecutory delusions and other types of delusions (Freeman & Garety, 2000). However, the terms persecutory ideation and paranoia have been used interchangeably by some authors (Bentall et al., 2001). For this work, the term *persecutory ideation* will be used to capture the range of clinical and nonclinical experiences that encompasses persecutory beliefs and paranoid delusions.

Psychological theories of persecutory ideation

Adversity and attachment

Numerous social and psychological factors have been identified as predictors of persecutory ideation (Bentall et al., 2014). Research has found that persecutory ideation is associated with early-life experiences of physical abuse (when controlling for co-occurring hallucinations), institutional care and neglect (Bentall, Wickham, Shevlin & Varese, 2012; Sitko, Bentall, Shevlin & Sellwood, 2014). The relationship between neglect and persecutory ideation has been found to be fully mediated by insecure attachment styles (Sitko et al., 2014). The association between insecure attachment and persecutory ideation has been found in the general population (Pickering, Simpson & Bentall, 2008), as well as with people experiencing psychosis (Wickham, Sitko & Bentall, 2015). It has been suggested that this is because of the important role of attachment in developing self-concepts and trust in others (Bowlby, 1969).

Cognitive mechanisms

Cognitive mechanisms have been identified in the process of experiencing persecutory ideation (Bentall et al., 2014). Reasoning biases, such as probabilistic reasoning or a tendency to jump to conclusions, have been implicated in the development of persecutory ideation. There is some evidence that people with persecutory delusions tend to

seek less information when making a decision (Garety & Freeman, 1999). However, individuals with persecutory delusions have been found to perform competently on other reasoning tasks, such as testing hypotheses (Garety & Freeman, 1999).

An external locus of control (feeling like one's life is largely determined by external factors) has been found to mediate the relationship between experiences of powerlessness and victimisation, and persecutory ideation (Mirowsky & Ross, 1983). Additionally, worry has been identified as a possible factor in the development of persecutory ideation (Freeman et al., 2012). This literature has led to cognitive-behavioural therapy interventions to support people experiencing persecutory ideation by targeting these specific cognitive mechanisms (Freeman et al., 2015; Morrison et al., 2004).

Functional perspectives on persecutory ideation

The 'paranoia as defence model' (Bentall, Kinderman & Kaney, 1994) proposed that people with persecutory ideation have underlying negative self-representations that differ from their ideal self. Threat-related information activates discrepancies between the actual and ideal self, so trigger a bias towards attributing negative events to other people to reduce awareness of this discrepancy. However, this leads to increased attention to interpersonal threat and persecutory ideation (Bentall et al., 1994). Thus, it has been hypothesized that paranoia could protect against threats to self-esteem and low mood (Bentall et al., 1994; Kinderman & Bentall, 1997). While there is evidence that in people with psychosis, paranoia severity is positively correlated with externalising attribution bias, there have been mixed findings regarding the relationship between self-esteem and persecutory ideation (Murphy, Bentall, Freeman, O'Rourke & Hutton, 2018).

The 'attribution-self representation cycle' model (Bentall et al., 2001) was proposed to account for these findings. This model suggests that while the externalising bias can result

in higher explicit self-esteem, the underlying negative self-representations continue to cause low implicit self-esteem. It proposes that there is a dynamic, reciprocal relationship between self-representations and attributional style. Therefore, the individual's self-esteem is not stable and can fluctuate over time. There is evidence that individuals with fluctuating self-esteem have a greater tendency to make negative external attributions (Kernis, 1993).

Consistent with the 'attribution-self representation cycle' model, people with persecutory delusions were found to have lower implicit self-esteem than the general population, and paranoia severity was positively correlated with self-esteem instability (Murphy et al., 2018). However, the severity of paranoia was also found to be negatively correlated with explicit self-esteem and there is some evidence that people with psychosis had similar levels of implicit self-esteem and self-esteem discrepancies, regardless of whether they had persecutory delusions (Murphy et al., 2018).

Subjective wellbeing and quality of life

The concepts of *subjective wellbeing* and *quality of life* are multidimensional and there is debate as to the extent to which these concepts are overlapping or distinct (Pinto, Fumincelli, Mazzo, Caldeira & Martins, 2017). A recent review found no empirical studies have compared the concepts of quality of life (QoL) and subjective wellbeing (SWB) and attempted to identify unique dimensions of each concept (Pinto et al., 2017). However, another review suggested that due to the degree of convergence between the developing definitions of SWB and QoL, these concepts can be considered virtually synonymous (Camfield & Skevington, 2008).

QoL has been defined as an individual's perception of their life, through their personal goals and values, in the context of their culture (WHOQOL Group, 1995). It is affected by physical health, psychological, social, and environmental factors. Possible unique

dimensions of this concept include sense of freedom and independence. It has been noted that subjective (self-rated) QoL and clinician-rated QoL are distinct constructs and can vary for the same individual (Pinikahana, Happell, Hope & Keks, 2002).

SWB has developed as a concept over time and is considered to incorporate psychological, emotional and social wellbeing (Pinto et al., 2017). It is considered 'subjective' because it refers the individual's evaluation of their own sense of wellness (Deci & Ryan, 2008) and has been found to poorly correlated to objective, material measures of wellbeing, such as income (Camfield & Skevington, 2008).

Two theoretical approaches to the study of wellbeing have been identified: the hedonic and eudaimonic philosophies, first described by Aristotle (Ryan & Deci, 2001). Early research was within the hedonic sphere, which defines wellbeing as happiness or pleasure, and pain avoidance (Ryff, 2014; Ryan & Deci, 2001). In contrast, eudaimonia defines wellbeing as fully functioning and is concerned with meaning-making and realising one's potential (Ryan & Deci, 2001; Ryff, 2014).

One domain of SWB is psychological wellbeing. It has been proposed that there are six core dimensions of subjective psychological wellbeing: autonomy, self-acceptance, purpose in life, personal growth, positive relationships and environmental mastery (Ryff, 2014). SWB has been redefined as an umbrella term for an individual's perception of their life, external circumstances and their minds and bodies (Diener, 2006).

SWB is thought to include high levels of satisfaction with life and positive feelings, such as happiness (Diener, 2000). Thus, life satisfaction appears to be a concept that is included in and subordinate to both SWB and QoL (Camfield & Skevington, 2008). However, as life satisfaction is a dimension included in widely used QoL assessments, such as the WHOQOL (Camfield & Skevington, 2008), these concepts will be considered together

in this review. Similarly, while happiness has been found to be one dimension of QoL, it is considered more integral to SWB (Camfield & Skevington, 2008). Thus, happiness and SWB will be presented together in this review.

Self-esteem is a distinct but related concept to SWB (Duy & Yıldız, 2019). Self-esteem has been described as a person's perception of their self-worth and feelings of self-acceptance, which is more cognitive in nature (Lyubomirsky, Tkach & DiMatteo, 2006; Rosenberg, 1965). There is much evidence of strong positive relationships between high self-esteem and happiness, SWB and life satisfaction (Diener & Diener, 2009; Pu, Hou & Ma, 2017; Rey, Extremera & Pena, 2011; Yuki, Sato, Takemura & Oishi, 2013). High self-esteem has also been found to be a strong indicator of SWB (Diener, 1984).

The two-continua model proposes that *mental illness* and *mental health* exist on two separate spectrums (Westerhof & Keyes, 2010; Keyes, 2014). Mental health, or SWB, can be considered on a scale between *flourishing* (high in levels of SWB) and *languishing* (low in levels of SWB; Keyes et al., 2003). This means that people with a diagnosis of a mental illness can have varying levels of SWB. Thus, SWB and mental illness have been conceptualised as distinct but correlated dimensions (Keyes, 2005).

While traditionally psychiatric research has defined recovery as the reduction in symptoms and psychological distress, there is evidence that this does not always equate to high levels of SWB (Ryff, 2014; Rafanelli et al., 2000). From this theoretical perspective, psychological distress and wellbeing are not merely opposites and are both contributors to mental health (Ryff, 2014). This has led to an increased study of wellbeing in recent research into mental health difficulties, including psychosis.

Persecutory ideation and wellbeing

Considerable research has investigated the relationship between persecutory ideation and psychopathology, particularly depression. For example, the content of persecutory delusions has been found to be associated with distress, anxiety and depression (Freeman, Garety & Kuipers, 2001). Similarly, another study found high levels of depression among people with psychosis and persecutory delusions, and the severity of depression at baseline predicted the persistence of persecutory delusions at 6-months follow-up (Vorontsova, Garety & Freeman, 2013). The presence of persecutory delusions in people with psychosis has also been found to be associated with higher levels of other positive symptoms (e.g., hallucinations) and depressive symptoms (Mehl et al., 2014).

Additionally, there have been systematic reviews of research considering the relationship between persecutory ideation and self-esteem and other self-concepts (Kesting & Lincoln, 2013; Murphy et al., 2018; Tiernan, Tracey & Shannon, 2014). It has been found that persecutory ideation is associated with negative self-concepts and low global explicit self-esteem. There is also some evidence that self-esteem instability is associated with persecutory ideation (Kesting & Lincoln, 2013; Murphy et al., 2018).

While systematic reviews have investigated the relationship between psychosis and QoL, they have not considered the role of persecutory ideation (Eack & Newhill, 2007; Pinikahana et al., 2002). These reviews have found evidence of a negative relationship between QoL and “negative symptoms” or “general psychopathology”, but the relationship with “positive symptoms” in general has been less clear. To date, the literature investigating the relationship between persecutory ideation and QoL or SWB has not been synthesized or reviewed.

Having insight (being aware of one's condition) has been identified as an important determinant of whether people with psychosis experience persecutory ideation. Insight has been associated with fewer symptoms (Mohamed et al., 2009), better health and social outcomes (McEvoy, 1998) and greater treatment adherence (McEvoy et al., 1989; McEvoy, Aland, Wilson, Guy & Hawkins, 1981). However, people with psychosis experiencing persecutory ideation and low insight have reported higher levels of psychological wellbeing in terms of autonomy, self-acceptance and personal growth, compared to those experiencing these difficulties with high insight (Valiente et al., 2011).

The relationship between persecutory ideation and both SWB and QoL is likely to be complex and may be influenced by several psychological variables. The following systematic review will seek to investigate the relationship between persecutory ideation and both SWB and QoL in both clinical and non-clinical populations. Given the lack of consensus of the degree to which SWB and QoL are distinct concepts, they will be reported separately (Camfield & Skevington, 2008; Pinto, 2017).

Key questions of the current review

1. Do people with higher levels of persecutory ideation experience lower levels of SWB and QoL?
2. Is there a difference in the relationship between persecutory ideation and SWB or QoL between people whose persecutory ideation has been classified as "delusional" and those with sub-clinical persecutory ideation?
3. What variables influence the relationship between persecutory ideation and SWB or QoL?
4. How does the methodological quality compare between the included papers?

Methods

Search strategy

Following scoping searches, systematic searches were completed in January 2020 using five electronic databases (PsychINFO, Web of Science, Scopus, Embase and Pubmed) to identify any relevant articles published before December 2019. The general search terms used were "Paranoi* OR Persecutory AND Wellbeing OR Well-being OR "Well being" OR Wellness OR "Quality of life" OR Thriving OR Languishing OR Eudemonia OR Eudaimonia OR Eudaemonia". The search strategy and specific terms used for each database are reported in Appendix B. The reference list of each included paper and all publications that cited each paper were hand searched for any additional relevant studies. The searches were repeated in May 2020. The review protocol was registered with PROSPERO, number CRD42020148743.

Study selection

The titles and abstracts of papers identified in the search were screened using the inclusion and exclusion criteria for the review. For each potentially relevant paper, the full-text article was sought and screened. Another trainee clinical psychologist also screened 10% of the titles and abstracts, as well as 10% of the full-text articles. There were no differences in agreement in classification between the reviewers.

Studies were included if they a) were quantitative studies using primary data, b) used standardised measures of persecutory ideation (or paranoia) and SWB or QoL, c) included participants who were adults over 18 years old, d) were published in peer-reviewed journals and e) were conducted in English language. Qualitative studies, case studies and review papers were excluded. Data that was experimentally manipulated, studies that primarily

tested the efficacy of medication or other interventions and studies that primarily used personality disorder or self-esteem measures were also excluded.

Assessment of study quality

The AXIS critical appraisal tool (Downes, Brennan, Williams & Dean, 2016) was used to appraise the quality of each included paper (see Appendix C). This tool was selected as it was designed for use with cross-sectional studies, which made up most of the included studies. Another trainee clinical psychologist also completed the quality assessment for 10% of included papers. There were no differences in agreement in classification between the reviewers.

Data extraction and analysis

For each paper, the study characteristics and key findings were extracted. Another trainee clinical psychologist checked the data extraction for accuracy for 10% of included papers. A narrative synthesis was conducted of the findings of the included studies. Nine papers using different datasets were identified which reported Pearson correlation coefficients of the relationship between persecutory ideation and QoL, a meta-analysis to calculate a pooled correlation coefficient was conducted using these papers. The Hedges-Olkin random effects method was used due to the small number of included studies and heterogeneity (Field, 2001). To assess possible publication bias, a funnel plot was created and inspected, the Egger test (Sterne & Egger, 2005) was performed, and Kendall's rank correlation coefficient (Begg & Mazumdar, 1994) was calculated. The meta-analysis was conducted using MedCalc version 19.5.3 (MedCalc Software Ltd., 2020).

Results

Study characteristics

Tables 1 and 2 display the main characteristics of the included papers. Relevant data for the

review was extracted and is displayed in Tables 3 and 4. The systematic search identified 5890 unique publications and 24 unique datasets reported across 30 papers were included in the review. A PRISMA flow diagram of the search strategy is presented in Figure 1 (Moher, Liberati, Tetzlaff & Altman, 2009) and excluded full text papers are reported in Appendix D.

Table 1

Characteristics of studies investigating subjective wellbeing

Author(s) and date	Design	Location	Sample	Diagnoses, *n*	Age, Mean (*SD*) in years	Gender, Female *n* (%)	Ethnicity
Freeman et al., 2014	Cross-sectional, between groups	England, UK	*N* = 496 Patients with persecutory delusions: *n* = 150 Control group: *n* = 346	Schizophrenia: 111 Schizoaffective disorder: 11 Delusional disorder: 10 Psychosis NOS: 18	Persecutory delusions group: 42.4 (11.8) Controls: 31.2 (10.7)	Persecutory delusions group: 64 (42.7%) Controls: 200 (57.8%)	Persecutory delusions group: White: 90.7% Controls: White: 89.3%
Freeman et al., 2019	Cross-sectional	England, UK	*N* = 1809 People with a diagnosis of non-affective psychosis and attending NHS mental health services	Schizophrenia: 1161 Schizoaffective disorder: 287 First episode psychosis: 127	41.3 (12.9)	547 (30.2%)	White: 72% Asian: 8.2% Black African: 6.2%
Koyanagi, 2017	Cross-sectional, between groups	England, UK	*N* = 7363 General population with and without psychotic-like experiences without a psychosis diagnosis	-	46.4 (18.6)	4179 (51.4%)	British White: 85.1%

Valiente et al., 2012	Cross-sectional, between groups	Madrid, Spain	*N* = 137 Psychiatric inpatients with current persecutory beliefs: *n* = 55 Psychiatric outpatients who currently meet criteria for depressive disorder: *n* = 38 Control group with no history of mental health problems: *n* = 44	Schizophrenia paranoid type: 28 Schizophreniform disorder: 9 Delusional disorder: 8	37.80 (12.26)	58.4%	-
Wickham et al., 2014	Cross-sectional	UK	*N* = 683 Undergraduate students	-	Liverpool university: 21.0 (3.96) University of East London: 26.64 (9.05) Liverpool Hope University: 24.10 (8.69)	527 (77.1%)	-

Table 2

Characteristics of studies investigating quality of life

Author(s) and date	Design	Location	Sample	Diagnoses, *n*	Age, Mean (*SD*) in years	Gender, Female *n* (%)	Ethnicity
Bow-Thomas et al., 1999	Prospective cohort study	Texas, USA	*N* = 45 Psychiatric inpatients	Schizophrenia or schizoaffective disorder	34.7	10%	Caucasian: 30% Hispanic: 70%
Chen et al., 2012	Cross-sectional, between groups	Taiwan	*N* = 78 Participants who use heroin, treated with methadone: *n* = 39 Healthy control group: *n* = 39	-	36.9 (7.1)	18 (23.1%)	Chinese ethnicity: 84.6%
Donini et al., 2020	Cross-sectional	Italy	*N* = 273 Patients at specialist obesity care centres without a severe psychiatric diagnosis	-	Men: 46.2 (14.2) Women: 46.1 (13.5)	199 (72.9%)	-
Fellinger et al., 2005	Cross-sectional, between groups	Austria	*N* = 233 Deaf people attending deaf clubs	-	45.3 (14.4)	102 (43.8%)	-
Huppert & Smith, 2005	Cross-sectional	USA	*N* = 32 Outpatients in schizophrenia programme	Schizophrenia: 24 Schizoaffective disorder: 8	36.6 (9.3)	13 (40.6%)	White: 62.5%

Jin et al., 2012	Cross-sectional, between group	China	*N* = 71 Liver donors	-	38.9 (10.44)	31 (43.7%)	-
Kentros et al., 1997	Cross-sectional	New York, USA	*N* = 21 Day programme patients	Schizoaffective disorder: 70% Schizophrenia: 30%	33.91 (7.80)	6 (28.6%)	White Caucasian: 100%
Kjellqvist et al., 2016	Cross-sectional	Sweden	*N* = 218 People with symptoms they attributed to electronics: *n* = 114 General population control group: *n* = 104	-	Target group: 49.2 (12.5) Controls: 48.3 (12.4)	Target group: 85 (74.6%) Controls: 83 (79.8%)	-
Koivumaa-Honkanen et al., 2011	Longitudinal, between groups	Finland	*N* = 121 Outpatients with suspected depression, without serious mental health disorders, such as schizophrenia	Major depression: 87 Bipolar: 1 Dysthymia or another diagnosis: 33	Men: 46.5 Women: 43.8	75 (62.0%)	-
Lasalvia et al., 2002	Cross-sectional, between groups	South-Verona, Italy	*N* = 139 Patients with diagnosis of a psychotic disorder receiving psychiatric care: n = 64	Psychosis group: Schizophrenia: 51 Severe affective disorder: 13	44.46 (14.53)	81 (58.3%)	-

			Patients with other (non-psychotic) psychiatric diagnoses: *n* 75				
Liao et al., 2019	Cross-sectional	Los Angeles, USA	*N* = 123 People who were currently or previously in treatment for marijuana use or have reduced their use	-	35.0 (12.4)	19.5%	Hispanic: 28.5% African American: 27.6% White: 23.6%
Nakagawa & Hayashi, 2013	Cross-sectional	Tokyo, Japan	*N* = 66 Inpatients with chronic Schizophrenia	Schizophrenia	68.0	66 (100%)	-
Oznur et al., 2015	Cross-sectional, between groups	Turkey	*N* = 258 Military personnel: Those with general symptom index (GSI) of above 1: *n* = 54 GSI under 1: *n* = 205	-	SI < 1: 25.42(6.12) GSI > 1: 24.63 (5.24)	-	-
Ritsner, 2003a†	Longitudinal, within group	Israel	*N* = 148 Patients with diagnosis of schizophrenia	Schizophrenia	38.2 (9.5)	18.2%	-
Ritsner et al., 2003b†	Cross-sectional, within group	Israel	*N* = 161 Inpatients with diagnosis of schizophrenia	Schizophrenia	38.3 (9.3)	31 (19.3%)	-

Ritsner et al., 2003c†	Longitudinal, between and within group	Israel	*N* = 199 Patients with a mental health diagnosis	Schizophrenia: 148 Schizoaffective disorder: 33 Mood disorders: 18	38.9 (10.1)	50 (25.1%)	-
Ritsner et al., 2006†	Longitudinal, within group	Israel	*N* = 148 Inpatients with diagnosis of schizophrenia	Schizophrenia	38.2 (9.5)	18.2%	-
Ritsner et al., 2011†	Cross-sectional, within group	Israel	*N* = 87 Patients with diagnosis of schizophrenia or schizoaffective disorder	Schizophrenia or schizoaffective disorder	47.8 (9.4)	21 (24.1)	-
Ritsner et al., 2012†	Naturalistic longitudinal	Israel	*N* = 108 Inpatients with diagnosis of schizophrenia or schizoaffective disorder	Schizophrenia or schizoaffective disorder	48.1 (9.3)	26 (24.1%)	-
Ritsner et al., 2014†	Prospective longitudinal, within group	Israel	*N* = 108 Patients who met criteria for diagnosis of schizophrenia or schizoaffective disorder and were followed for 10 years	Schizophrenia or schizoaffective disorder	48.1 (9.3)	24.1%	-
Strutt et al., 2011	Cross-sectional, between groups	USA	*N* = 81 Female patients with seizures, without a history of psychotic disorders.	Temporal lobe epilepsy (TLE): 51 Psychogenic nonepileptic	TLE: 33.9 (10.1) PNES: 38.9 (13.9)	51 (100%)	TLE: Caucasian: 54.9% African American: 15.7%

				seizures (PNES): 30			Hispanic: 27.5% PNES: Caucasian: 63.3% African American: 16.7% Hispanic: 16.7%
Tambelli et al., 2017	Cross-sectional	Rome, Italy	*N* = 64 Patients at specialist obesity care centre without a psychiatric diagnosis	-	Men: 44.9 (12.7) Women: 46.1 (14.6)	41 (64.1%)	Caucasian Italian: 100%
Tang & Thomas, 2020	Cross-sectional	Australia	*N* = 559 Psychology students (*n* = 348) and general population	Previous mental health diagnosis: 230	29.1 (4.3)	438 (78.4)	-
Tian et al., 2017	Cross-sectional	Shanghai, China	*N* = 165 Patients diagnosed with primary paroxysmal kinesigenic dyskinesia	-	24.2 (6.3)	27 (16.4%)	-
Valiente et al., 2010	Cross-sectional, between groups	Madrid, Spain	*N* = 84 Psychiatric inpatients with current persecutory beliefs: *n* = 40 Control group with no history of mental health problems: *n* = 44	Schizophrenia: 19 Delusional disorder: 8 Schizophreniform disorder: 7	Paranoia group: 34.56 (11.90) Controls: 37.41 (13.00)	Paranoia: 47.50% Controls: 54.50%	-

† All of these studies report the same dataset

Table 3

Main findings of studies investigating subjective wellbeing

Study	Persecutory beliefs or paranoia measure	Paranoia score, mean (*SD*)	Wellbeing or happiness measure	Wellbeing score, mean (*SD*)	Analysis	Main finding
Freeman et al., 2014	Persecutory delusions: Psychotic Symptom Rating Scales - delusions scale (PSYRATS; Haddock, McCarron, Tarrier & Faragher, 1999) Paranoia: Paranoid thoughts scale part B (GPTS-B; Green et al., 2008)	Persecutory delusions group: 58.6 (15.7) Controls: 22.0 (10.2)	Wellbeing: Warwick-Edinburgh mental wellbeing scale (WEMWBS; Tennant et al., 2007)	Persecutory delusions group: 35.4 (9.4) Controls: 50.9 (8.4)	Pearson correlation coefficients used to test association between wellbeing and symptom scores	Persecutory group: Lower levels of wellbeing associated with higher levels of persecutory delusions (r = -.44, p < .001) and paranoia (r = -.30, p < .001) Non-clinical group: Lower levels of wellbeing associated with higher levels of paranoia, r = -.44, p < .001
Freeman et al., 2019	Paranoia: GPTS-B	38.0 (21.1)	Wellbeing: WEMWBS	44.6 (12.8)	Pearson correlations	Paranoia associated with lower levels of psychological wellbeing, N = 1809, r = -0.29, p < .001

Koyanagi, 2017	Paranoia: Psychosis Screening Questionnaire (PSQ; Bebbington & Nayani, 1995)	-	Happiness: 1 cross-culturally validated question	-	Univariate and multivariate ordinal logistic regression analyses	Univariate models: *OR* = 5.34, *p* < .001 95% *CI* [3.40, 8.41] Multivariable models: *OR* = 3.59, *p* < .001 95% *CI* [2.26, 5.69]
Valiente et al., 2012	Persecutory ideation: Persecution and Deservedness Scale (PaDS; Melo, Corcoran, Shryane & Bentall, 2009)	Paranoia group: 16.54 (10.90) Depression: 15.80 (10.20) Control: 4.86 (5.01)	Wellbeing: Psychological Wellbeing Scales (PWS; Ryff, 1989)	Reported by 6 subscales	MANCOVA and moderation analyses	Severity of persecutory thinking and cognitive self-consciousness at Step 1 explained no more than 0.1% of variance, $\Delta R^2 = 0.001$, $\Delta F(2, 109) = 0.057$, $p = .94$ At Step 2 the interaction of persecutory thinking and cognitive self-consciousness explained an additional 15% of variance in wellbeing, $\Delta F(1, 108) = 19.05$, $p < 0.001$
Wickham et al., 2014	Persecutory ideation: PaDS	13.84 (9.11)	Happiness: Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999)	3.41 (1.25)	Pearson correlations	Positive correlation between persecutory ideation and poor wellbeing, $r = 0.44$, $p < 0.01$

Table 4

Main findings of studies investigating quality of life

Study	Persecutory beliefs or paranoia measure	Paranoia score, mean (*SD*)	Quality of life or life satisfaction measure	Wellbeing score, mean (*SD*)	Analysis	Main finding
Bow-Thomas et al., 1999	Paranoia: Brief Psychiatric Rating Scale (BPRS; Lukoff, Nuechterlein & Ventura, 1986)	Initial: 2.13 (1.07) Discharge: 1.70 (0.73) Follow-up: 1.82 (0.86)	Quality of life: Heinrichs-Carpenter Quality of Life Scale (Heinrichs, Hanlon & Carpenter, 1984)	Initial: 46.41 (15.54) Discharge: N/A Follow-up: 55.02 (18.69)	Pearson correlations Forward stepwise regression procedures to determine which symptom subscale or factors were best predictors of QoL	Negative correlation between paranoia and quality of life: Initial assessment: (r = -0.30, p<0.05) Follow-up: (r = -0.41, p<0.01) BPRS paranoia (and depression) components were most important in predicting QoL during the acute phase of illness ($F_{3, 41}$ = 5.02, p = 0.01) Negative correlation between changes in paranoia and changes in QoL at follow-up: (r = -0.50, p < 0.001)
Chen et al., 2012	Paranoia: BPRS translated for use in Taiwan	All participants: 1.3 (1.6), Healthy	Quality of life: Taiwanese version of WHO Quality	For heroin using participants: WHOQOL	Pearson's correlation analysis of correlates of HRQoL and psychopathology,	Negative correlation of paranoid symptoms and psychological domain of HRQoL: r = -.465 (p < .01)

		controls: 0.9 (1.6), Heroin users 1.7 (1.6)	of Life - Short Form (WHOQOL-BREF (TW); World Health Organization, 1998)	physical domain: 54.6 (17.4) Psychological domain: 46.0 (23.9) Social domain: 52.9 (20.5) Environmental domain: 50.0 (19.6)	including paranoid symptoms Stepwise multiple regression analysis – used to control for potentially confounding factors	Paranoid symptoms as predictor of environmental domain of HRQoL: $\beta = -0.466$, $R^2 = .207$, $p < .001$
Donini et al., 2020	Paranoid ideation: Symptom Checklist- 90 revised (SCL-90-R; Derogatis, 1994)	-	Quality of life: Italian version Laval questionnaire (Therrien et al., 2011)	-	Spearman correlations	Negative correlations between paranoid ideation and health-related quality of life for men ($r_s = -.42$, $p < .001$) and women ($r_s = -.50$, $p < .001$)
Fellinger et al., 2005	Paranoid ideation: Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983)	1.10 (0.77)	Quality of life: WHO's Brief quality of life questionnaire (WHOQOL-BREF)	Psychological domain: 64.16 (17.17)	Pearson correlations	Negative correlation between paranoid ideation and all domains of health-related quality of life. Psychological domain: $r = -.18$, $p < .05$
Huppert & Smith,	Paranoia: Inventory of	Suspiciousness : 3.22 (1.56)	Quality of life: Lehman	Global QoL: 4.44 (1.74)	Pearson correlations	Paranoia was associated with global QoL ($r = -.48$, $p < .01$) and also

2005	Hostility and Suspiciousness (Rawlings & Freeman, 1996) Suspiciousness : Positive and Negative Syndrome Scale (PANSS; Kay Opler & Lindenmayer, 1988) Suspiciousness scale		(Lehman, 1988)Quality of Life Interview			significantly associated with health, living and social QoL subscales. Suspiciousness was not significantly associated with global QoL (r = -0.16) but was associated with living QoL scale (r = .38, p < .05)
Jin et al., 2012	Paranoid ideation: SCL-90-R	1.25 (0.29)	Quality of life: Chinese version (2002) of Medical Outcomes Study Short form – 36 (SF-36; Ware & Sherbourne, 1992)	Mental health domain: 74.13 (17.12)	Pearson Correlation	Paranoid ideation was not significantly associated with mental component of HR QoL, r = -.157, p = .408
Kentros et al., 1997	Paranoid ideation: SCL-90-R	-	Quality of life: Lehman QoL Interview	-	Correlation analysis	Global satisfaction scores were not correlated with self-reported rating of paranoia.

Kjellqvist et al., 2016	Paranoid ideation: SCL-90	Target group: 0.53 (0.74) Control group: 0.35 (0.56)	Quality of life: SF-36	Mental health subscale: Target group: 66.0 (21.4) Controls: 78.2 (16.1)	Spearman correlation	Correlation co-efficient for mental health domain of SF-36 and paranoid ideation Target group: $r_s = -.56, p < .001$ Control group: $r_s = -.50, p < .001$
Koivumaa-Honkanen et al., 2011	Paranoid ideation: SCL-90	Baseline: Satisfied: 1.56 Dissatisfied: 2.24 6 year follow up: Satisfied: 1.43 Dissatisfied: 2.09	Life satisfaction: 4-item Life Satisfaction Scale (Allardt, 1976) (Satisfied: LS 4-11, Dissatisfied: LS 12-20)	Baseline Men: 13.8 Women: 13.8 6 year follow up: Men: 9.28 Women: 9.37	Mann-Whitney *U* test, *Z* statistics	The paranoid ideation scores for the individuals who rated themselves as satisfied with life were lower than those who were dissatisfied. At baseline: $U(N_{satisfied} = 46, N_{Dissatisfied} = 93) = -4.07, p < .001$ At 6 year follow-up: $U(N_{satisfied} = 94, N_{Dissatisfied} = 27) = -3.86, p < .001$
Lasalvia et al., 2002	Paranoid ideation: SCL-90-R Italian version	Psychosis group: 0.71 (0.75) Non-psychosis: 0.85 (0.70)	Quality of life: Lancashire Quality of Life Profile (LQL; Oliver, 1991)	Total scores: Psychosis group: 4.81 (0.91) Non-psychosis: 4.58 (0.80)	Spearman correlation Predictors of QoL analysed with linear regression models (stepwise)	Paranoid ideation and quality of life were negatively correlated for the group with psychosis ($r_s = -.49, p \geq .40$) and with out psychosis ($r_s = -.62, p \geq .40$) High levels of depressive symptoms and paranoid ideation predicted poor total subjective quality of life, $\beta = -0.28, p < .01$, variance explained: 16% Paranoid ideation had the highest impact on family relations domain

						(β = -0.42, $p < .01$, variance explained: 17%) and legal/safety (β = -0.40, $p < .01$, variance explained: 16%)
Liao et al., 2019	Paranoia: Specific Psychotic Experiences Questionnaire – Paranoia Subscale	22.4 (25.4)	Quality of life: Short form 12 Health Survey (SF-12; Ware, Kosinski & Keller, 1996)	46.1 (10.4)	Pearson correlation Confirmatory factor analysis and structural equation modelling.	HRQoL was correlated with paranoia, $r = -.40$, $p < .001$ Mental health symptoms were positively associated with marijuana use frequency and negatively linked to HRQoL, β = -0.67, $p < .001$
Nakagawa & Hayashi, 2013	Paranoid Belligerence: PANSS	-	Quality of life: LQLP	-	Pearson correlations. Stepwise forward selection regression analyses.	No significant correlation between paranoid / belligerence and LQLP, $r = .22$, $p > .05$ Paranoid/ belligerence symptom cluster indicated as factor that heightens subjective QoL, β = 0.29, $p < .01$
Oznur et al., 2015	Paranoid ideation: BSI – Turkish adaptation	-	Quality of life: Quality of Life Short Form (SF-36)	GSI < 1: 64.41 (15.76) GSI > 1: 39.11 (14.30)	Backward linear regression analysis	Paranoid ideation subscale score had a positive effect on the SF-36 role limitations due to physical health subscale score, β =0.68, $t = 3.97$, $p = .001$, 95% CI: 16.49 – 52.76
Ritsner, 2003a*	Paranoia: PANSS	Initial assessment:	Quality of life: Quality of Life	Subjective feelings	Paired t-tests and regression analyses	Subjective feelings domain significantly improved during

	Paranoid ideation: Talbieh Brief Distress Inventory (TBDI; Ritsner, Rabinowitz & Slyuzberg, 1995)	PANSS Paranoid cluster: 7.4 (2.6) Follow-up: 6.7 (2.5)	Enjoyment and Satisfaction Questionnaire (Q-LES-Q; Endicott, Nee, Harrison & Blumenthal, 1993)	domain: Initial assessment: 48.5 (12.8) Follow-up: 52.0 (13.2)	using step-wise backwards selection procedure	follow up period ($t = 2.9$, $p < .01$) and PANSS paranoid scores reduced ($t = 2.8$, $p < .01$). Paranoid symptoms were inversely associated with variability of QoL domain ratings. Paranoid ideation (TBDI) contributed significantly to the model for subjective feelings, β = -0.24, Partial $R^2 = 7.2\%$, $p < .001$ Paranoid factor (PANSS) contributed significantly to the model for general activities domain, β = -0.19, Partial $R^2 = 5.3\%$, $p < .001$
Ritsner et al., 2003b*	Paranoia: PANSS	7.35 (2.67)	Quality of life: Q-LES-Q	Perceived QoL Index: 3.35 (0.76)	Pearson correlations and regression with mediation analysis	Perceived QoL was moderately negatively associated with paranoid symptom cluster, $r = -.27$, $p < .001$ Paranoid symptoms were a significant predictor of quality of life, β = 0.39, $SE = 0.02$, $p < .001$
Ritsner et al., 2003c*	Paranoia: PANSS	Patients with schizophrenia Initial assessment: 7.4 (2.6) Follow-up: 6.7	Quality of life: Q-LES-Q	Patients with schizophrenia Perceived QoL Index at assessment: 3.4 (0.7)	Multiple regression analyses	Reduction in paranoid factor predicted increased quality of life index score, β = -0.14, Partial $R^2 = 0.028$, $p < .001$

		(2.5)		Follow-up: 3.5 (0.7)		
Ritsner et al., 2006*	Paranoia: PANSS	Initial assessment: PANSS Paranoid cluster: 7.4 (2.6) Follow-up: 6.7 (2.5)	Quality of life: Q-LES-Q	-	Regression and partial correlation analyses	During follow-up (inpatients n=59), paranoid factor significantly predicted changes in general QoL, β = -0.30, Partial R^2 = 12.7%, p < .009 This relationship lost its significance when depression, adverse effects, emotional distress, coping styles and self-constructs were controlled for.
Ritsner et al., 2011*	Paranoid ideation: TBDI	-	Quality of life: Q-LES-Q	-	Multiple regressions	During follow-up, paranoid ideation factor significantly predicted changes in general QoL, β = -0.31, F = 17.3, Partial R^2 = 20%, p < .001
Ritsner et al., 2012*	Paranoid ideation: TBDI	Initial assessment: 1.37 (1.07) Follow-up: 1.40 (1.07)	Quality of life: Q-LES-Q	-	Multiple regressions	During follow-up, changes in paranoid ideation factor significantly predicted changes in the subjective feelings domain of QoL, β = 0.19, F = 6.6, Partial R^2 = 9.2%, p < .012 Also predicted changes in physical health and satisfaction with medicine domains of QoL.
Ritsner et	Paranoid		Quality of life:	'Poor' (n = 82)	Stepwise logistic	The poor QoL group scored higher

al., 2014*	ideation: TBDI		Q-LES-Q	and 'good' (*n* = 26) general QoL outcomes were defined by the median cut-off scores of healthy participants	regression	on paranoid ideations, $t = 2.1$, $p = 0.034$ Paranoid ideation predicts membership in poor versus good QoL outcome group, β = -1.13, *SE* = 0.39, $p = 0.005$, *OR* = 1.4
Strutt et al., 2011	Paranoia: Minnesota Multiphasic Personality Inventory (MMPI-2; Butcher, Graham, Tellegen & Kaemmer, 1989)	-	Quality of life: Quality of Life in Epilepsy Inventory – 89 (QOLIE-89; Devinsky, 1995)	-	Pearson correlation	Total health-related quality of life (HRQOL) was not significantly correlated any personality characteristic for the participants with PNES. Total HRQOL was negatively correlated with paranoia for those with TLE, $r = -.52$, $p = .007$
Tambelli et al., 2017	Paranoid ideation: SCL-90-R	Men: 0.63 (0.48) Women: 0.94 (0.89)	Quality of life: Obesity-Related Wellbeing (ORWELL) scale (Mannucci, 1999)	Men: 45.79 (17.97) Women: 50.09 (12.29)	Linear regression analyses	Paranoid ideation was not found to significantly effect on obesity-related quality of life for men (β = 0.49, $t = 1.03$) or women (β = -0.13, $t = -0.48$).
Tang & Thomas,	Paranoid ideation: BSI	.87 (.89)	Quality of life: WHOQOL-	WHOQOL-BREF Total:	Spearman correlations and	Spearman correlation: $r_s = -.41$, *FDR* $p = .04$ (Benjamini and

2020			BREF	3.83 (.55)	hierarchical multiple regression analyses	Hochberg False discovery rate-adjusted p) Regression: Paranoid ideation predicted environmental QoL (β = -0.13, *p* = .029) but not total QoL (β = -0.06, *p* = .333) or any other QoL domains.
Tian et al., 2017	Paranoid ideation: SL-90-R Chinese version	1.9 (0.7)	Quality of Life: WHOQoL-100 (Yuan-Tao & Ji-Qian, 2000)	Psychological domain: 12.8 (1.6) General QoL: 12.5 (2.9)	Univariate and multivariate linear regression	Higher scores for paranoid ideation were associated with lower total scores for quality of life. Univariate: β = -8.6 95% *CI*: -11.1 - -6.2, *p* < .001
Valiente et al., 2010	Persecutory ideation: Persecutory and Deservedness Scale (PaDS; Melo, Corcoran, Shryane & Bentall, 2009	Paranoia group: 1.68 (1.21) Controls: 0.44 (0.43)	Life satisfaction: Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen & Griffin, 1985)	Paranoia: 17.68 (7.82) Controls: 23.86 (5.07)	Pearson correlations	Negative correlation between persecutory ideation and life satisfaction, *r* = -.32, *p* < .05

† All of these studies report the same dataset

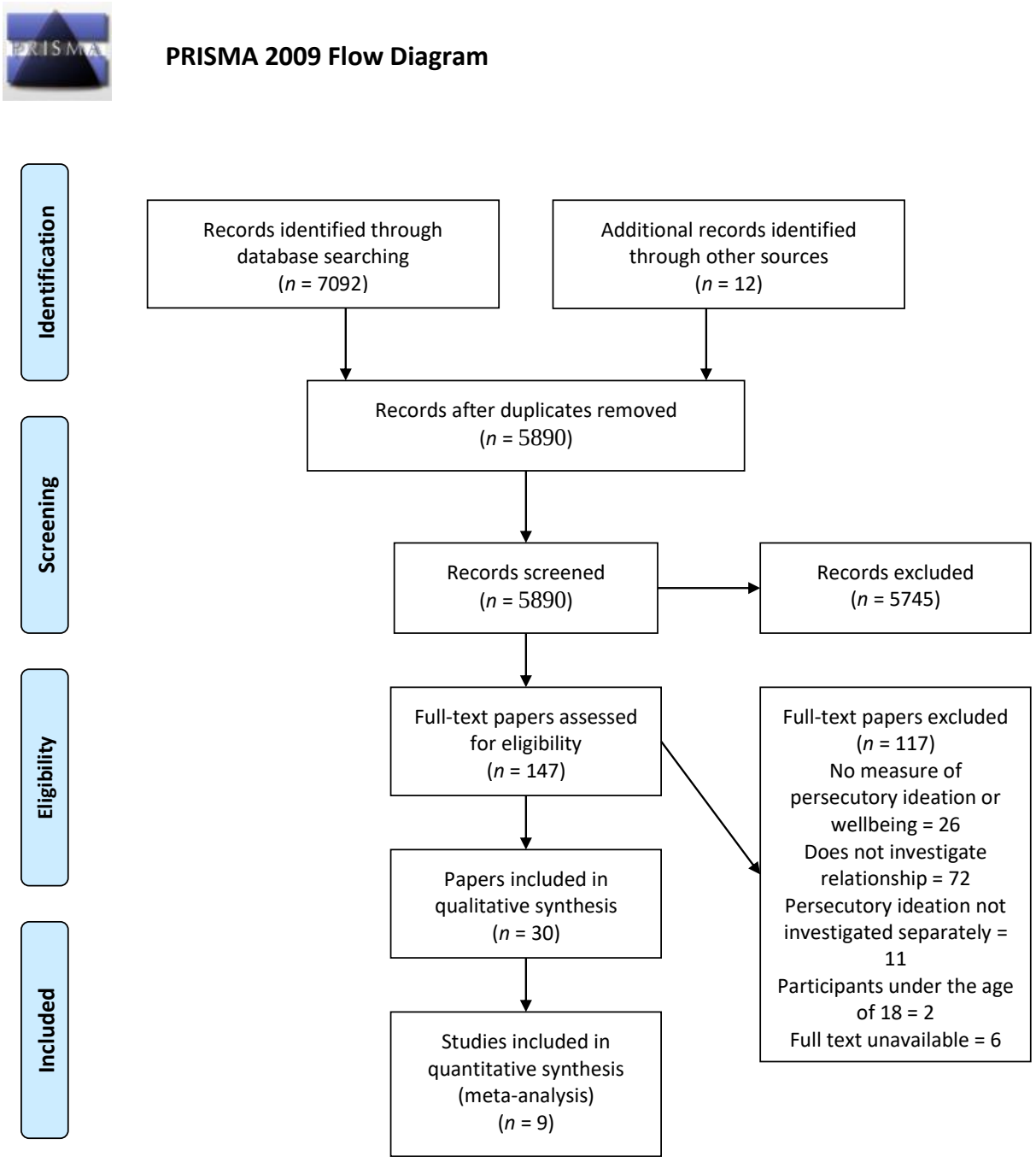

Figure 1. PRISMA Flow Diagram. A PRISMA flow diagram of papers identified, included and excluded. (Moher, Liberati, Tetzlaff & Altman, 2009).

A total of 13,331 participants were included across all studies. There was a large range in the number of participants included across the studies, from 21 to 7363 participants. The studies were conducted across 11 countries, the most common of which were the USA (*n*

= 5) and the UK (*n* = 4). Most of the studies used a cross-sectional design. There was one prospective cohort study, which included follow-up data (Bow-Thomas, Velligan, Miller & Olsen, 1999). One longitudinal study, the Sha'ar Menashe Longitudinal Study of Quality of Life (SMLS-QOL) was reported in seven separate papers at different time points; two of these papers were cross-sectional in design (Ritsner, 2003a; Ritsner et al., 2003b) and five compared data at different time points (Ritsner et al., 2003c; Ritsner, Arbitman & Lisker, 2011; Ritsner, Arbitman, Lisker & Ponizovsky, 2012; Ritsner, Gibel & Ratner, 2006; Ritsner, Lisker & Grinshpoon, 2014).

Three papers reported a measure of persecutory ideation (Valiente et al., 2010; 2012; Wickham et al., 2014). One paper reported a measure of persecutory delusions (Freeman et al., 2014). The remaining papers reported a measure of paranoia or paranoid delusions. Some papers reported more than one of these measures. Table 5 displays the measures used and which concept they assess for each included paper.

Table 5

Measures used to assess persecutory ideation and paranoia

Concept	Measure	Studies using the measure
Persecutory ideation	Persecution and Deservedness Scale (PaDS; Melo, Corcoran, Shryane & Bentall, 2009)	Valiente et al., 2010; 2012; Wickham et al., 2014
Persecutory delusions	Psychotic Symptom Rating Scales - delusions scale (PSYRATS; Haddock, McCarron, Tarrier & Faragher, 1999)	Freeman et al., 2014
Paranoia	Paranoid thoughts scale part B (GPTS-B; Green et al., 2008)	Freeman et al., 2014; 2019

	Psychosis Screening Questionnaire (PSQ; Bebbington & Nayani, 1995)	Koyanagi, 2017
	Brief Psychiatric Rating Scale (BPRS; Lukoff, Nuechterlein & Ventura, 1986)	Bow-Thomas et al., 1999; Chen et al., 2012 (Taiwanese version)
	Inventory of Hostility and Suspiciousness (Rawlings & Freeman, 1996)	Huppert & Smith, 2005
	Specific Psychotic Experiences Questionnaire – Paranoia Subscale	Liao et al., 2019
	Positive and Negative Syndrome Scale (PANSS; Kay Opler & Lindenmayer, 1988)	Huppert & Smith, 2005; Nakagawa & Hayashi, 2013; Ritsner, 2003a†; Ritsner et al., 2003b†; 2003c†; 2006†
	Minnesota Multiphasic Personality Inventory (MMPI-2; Butcher, Graham, Tellegen & Kaemmer, 1989))	Strutt et al., 2011
Paranoid ideation	Symptom Checklist- 90 revised (SCL-90-R; Derogatis, 1994)	Donini et al., 2020; Jin et al., 2012; Kentros et al., 1997; Kjellqvist et al., 2016; Koivumaa-Honkanen et al., 2011; Lasalvia et al., 2002 (Italian version); Tambelli et al., 2017; Tian et al., 2017 (Chinese version)
	Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983)	Fellinger et al., 2005; Oznur et al., 2015 (Turkish version); Tang & Thomas, 2020
	Talbieh Brief Distress Inventory (TBDI; Ritsner, Rabinowitz & Slyuzberg, 1995)	Ritsner, 2003a†; Ritsner et al., 2011†; 2012†; 2014†

† All of these papers reported the same dataset.

Five papers reported a measure of SWB or a related concept (Freeman et al., 2014; Freeman, Taylor, Molodynski & Waite, 2019; Koyanagi, 2017; Valiente, Prados, Gómez & Fuentenebro, 2012; Wickham, Shryane, Lyons, Dickins & Bentall, 2014). The remaining papers reported a measure of QoL or life satisfaction. Table 6 displays the measures used and which concept they assess for each included paper.

Table 6

Measures used to assess subjective wellbeing and quality of life

Concept	Measure	Studies using the measure
Subjective wellbeing	Warwick-Edinburgh mental wellbeing scale (WEMWBS; Tennant et al., 2007)	Freeman et al., 2014; 2019
Psychological wellbeing	Psychological Wellbeing Scales (PWS; Ryff, 1989)	Valiente et al., 2012
Happiness	Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999)	Wickham et al., 2014
	1 cross-culturally validated question	Koyanagi, 2017
Quality of life	World Health Organisation Quality of Life - Short Form (WHOQOL-BREF; World Health Organization, 1998)	Chen et al., 2012 (Taiwanese version); Fellinger et al., 2005; Tang & Thomas, 2020
	World Health Organisation Quality of Life – 100 (WHOQoL-100; Yuan-Tao & Ji-Qian, 2000)	Tian et al., 2017
	Heinrichs-Carpenter Quality of Life Scale	Bow-Thomas et al., 1999

	(Heinrichs, Hanlon & Carpenter, 1984)	
	Lehman Quality of Life Interview (Lehman, 1988)	Huppert & Smith, 2005; Kentros et al., 1997
	Medical Outcomes Study Short form – 36 (SF-36; Ware & Sherbourne, 1992)	Jin et al., 2012 (Chinese version, 2002); Kjellqvist et al., 2016; Oznur et al., 2015 (Turkish version)
	Short form 12 Health Survey (SF-12; Ware, Kosinski & Keller, 1996) †	Liao et al., 2019
	Lancashire Quality of Life Profile (LQL; Oliver, 1991)	Lasalvia et al., 2002; Nakagawa & Hayashi, 2013
	Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q; Endicott, Nee, Harrison & Blumenthal, 1993)	Ritsner, 2003a‡; Ritsner et al., 2003b‡; 2003c‡; 2006‡; 2011‡; 2012‡; 2014‡
	Laval questionnaire (Therrien et al., 2011)§	Donini et al., 2020 (Italian version)
	Obesity-Related Wellbeing (ORWELL) scale (Mannucci, 1999) §	Tambelli et al., 2017
	Quality of Life in Epilepsy Inventory – 89 (QOLIE-89; Devinsky, 1995)	Strutt et al., 2011
Life satisfaction	4-item Life Satisfaction Scale (Allardt, 1976)	Koivumaa-Honkanen et al., 2011
	Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen & Griffin, 1985)	Valiente et al., 2010

Nine datasets included participants with psychiatric diagnoses that included symptoms of paranoia, most commonly schizophrenia and schizoaffective disorder. Five of these datasets involved participants accessing outpatient services (Freeman et al., 2014; Freeman, et al., 2019; Huppert & Smith, 2005; Kentros, Terkelsen, Hull, Smith & Goodman, 1997; Koivumaa-Honkanen et al., 2011). Six of these datasets across 12 papers involved participants who were inpatients at the beginning of the study (Bow-Thomas et al., 1999; Lasalvia, Ruggeri & Santolini, 2002; Nakagawa & Hayashi, 2013; Ritsner, 2003a; Ritsner et al., 2003b; 2003c; 2011; 2012; 2006; 2014; Valiente, Espinosa, Vázquez, Cantero & Fuentenebro, 2010; Valiente et al., 2012).

The remaining datasets involved participants with a physical health concern (Donini et al., 2020; Fellinger et al., 2005; Jin et al., 2012; Kjellqvist, Palmquist & Nordin, 2016; Strutt, Hill, Scott, Uber-Zak, L & Fogel, 2011; Tambelli et al., 2017; Tian et al., 2017), the general population (Koyanagi, 2017; Tang & Thomas, 2020), participants with a history of substance use (Chen et al., 2012; Liao et al., 2019), students (Wickham et al., 2014) and military personnel (Oznur et al., 2015).

Results of assessment of study quality

The results of the assessment of study quality are presented in Table 7. Only one included paper reported a justification of the sample size used (Tang & Thomas, 2020) and as noted above, there was a large range of sample sizes across the datasets. Very few papers provided information about non-responders (Freeman et al., 2014; Ritsner, 2003a; Ritsner et al., 2003c; 2011) and there are concerns about non-response bias for many of the included studies (Fellinger et al., 2005; Freeman et al., 2014; 2019; Tian et al., 2017). Concerns of the representativeness of the sample frame (Donini et al., 2020; Nakagawa & Hayashi, 2013; Strutt et al., 2011; Tambelli et al., 2017; Wickham et al., 2014) and selection process is a methodological limitation of several of the studies (Bow-Thomas et al., 1999; Donini et al.,

2020; Fellinger et al., 2005; Jin et al., 2012; Lasalvia et al., 2002; Ritsner et al., 2003b; 2006; 2011; 2012; 2014; Tambelli et al., 2017; Wickham et al., 2014). Additionally, a minority of authors reported that they did not have a conflict of interest in their studies, so it is not known if the remaining papers had conflicts of interest.

Table 7

Quality assessment of included studies by each item of the AXIS tool

Paper	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
Bow-Thomas et al., 1999	Y	Y	N	Y	Y	DK	N	Y	Y	Y	Y	Y	DK	N	Y	Y	Y	Y	DK	Y	14
Chen et al., 2012	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	DK	N	Y	Y	Y	Y	N	Y	15
Donini et al., 2020	Y	Y	N	Y	N	N	N	Y	Y	Y	Y	N	Y	N	Y	Y	Y	Y	N	Y	13
Fellinger et al., 2005	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	Y	N	Y	Y	DK	DK	14
Freeman et al., 2014	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	DK	18
Freeman et al., 2019	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	16
Huppert & Smith, 2005	Y	Y	N	Y	Y	Y	N	Y	Y	Y	N	Y	DK	N	Y	N	Y	Y	Y	Y	13

Jin et al., 2012	Y	Y	N	Y	Y	N	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	DK	Y	14
Kentros et al., 1997	Y	N	N	Y	Y	Y	N	Y	Y	Y	Y	N	DK	N	Y	N	Y	Y	DK	Y	12
Kjellqvist et al., 2016	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	17
Koyanagi, 2017	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	17
Koivumaa-Honkanen et al., 2011	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	DK	Y	15
Lasalvia et al., 2002	Y	Y	N	Y	Y	N	N	Y	Y	Y	Y	Y	DK	N	Y	Y	Y	Y	DK	DK	13
Liao et al., 2019	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	DK	N	Y	Y	Y	Y	N	Y	16
Nakagawa & Hayashi, 2013	Y	Y	N	Y	N	Y	N	Y	Y	Y	Y	Y	DK	N	Y	Y	Y	Y	N	Y	15

Oznur et al., 2015	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	DK	N	Y	Y	Y	Y	N	Y	16
Ritsner, 2003a	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	DK	Y	17
Ritsner et al., 2003b	Y	Y	N	Y	Y	N	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	DK	Y	14
Ritsner et al., 2003c	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	17
Ritsner et al., 2006	Y	Y	N	Y	Y	DK	N	Y	Y	Y	Y	N	DK	N	Y	Y	Y	Y	DK	Y	13
Ritsner et al., 2011	Y	Y	N	Y	Y	DK	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	15
Ritsner et al., 2012	Y	Y	N	Y	Y	DK	N	Y	Y	Y	Y	N	DK	N	Y	Y	Y	N	N	Y	13
Ritsner et al., 2014	Y	Y	N	Y	Y	DK	N	Y	Y	Y	Y	Y	DK	N	Y	Y	Y	Y	N	Y	15
Strutt et al.,	Y	Y	N	Y	N	Y	N	Y	Y	Y	Y	N	DK	N	Y	Y	Y	Y	DK	Y	13

2011																					
Tambelli et al., 2017	Y	Y	N	Y	N	N	N	Y	Y	Y	Y	Y	DK	N	Y	Y	N	Y	N	Y	13
Tang & Thomas, 2020	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	18
Tian et al., 2017	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	N	Y	17
Valiente et al., 2010	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	DK	N	Y	Y	Y	Y	Y	DK	Y	15
Valiente et al., 2012	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	DK	N	Y	Y	Y	Y	Y	DK	Y	15
Wickham et al., 2014	Y	Y	N	N	N	N	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	DK	DK	11

Y (Yes). N (No). DK (Do not know). See Appendix C for details of the AXIS tool items.

As the use of validated measures was an inclusion criterion for studies in this review, all included studies used relevant, validated measures. Three datasets used a wellbeing measure, two datasets used happiness measures and 19 datasets (reported across 26 papers) used a measure of quality of life or satisfaction with life. Seven datasets used a measure of persecutory ideation and 17 datasets across 23 papers included a measure of paranoia.

Overall, three papers were of high quality (Freeman et al., 2014; Kjellqvist et al., 2016; Tian et al., 2017). Six papers were also of high quality but there were concerns of possible non-response bias (Koyanagi, 2017; Liao et al., 2019; Oznur et al., 2015; Ritsner et al., 2003a; 2003c; Thomas & Tang, 2020). Seven papers were considered lower in quality due to possible concerns about non-response bias and the representativeness of the sample and selection process (Donini et al., 2020; Kentros et al., 1997; Ritsner et al., 2006; 2012; Strutt et al., 2011; Tambelli et al., 2017; Wickham et al., 2014). The paper by Huppert and Smith (2005) was also considered lower in quality due to possible non-response bias and inadequate description of methods and results.

Relationship between persecutory ideation and subjective wellbeing

Non-clinical sample

Three papers found a negative association between persecutory ideation and SWB or psychological wellbeing in a non-psychiatric sample. The most common scale used was the Warwick-Edinburgh mental wellbeing scale (WEMWBS; Tennant et al., 2007) which measures SWB (Freeman et al., 2014; 2019). Two of these datasets used different subjective measures of happiness (Wickham et al., 2014; Koyanagi, 2017).

One paper (Wickham et al., 2014) found a significant positive correlation ($r = .44$, $p < .001$) between persecutory ideation and poor wellbeing, measured by reverse scores of the Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999). While the sample size of

this study was relatively large (N = 683), it was considered low in quality and mainly comprised of female students, so there may be limited scope for generalising the findings of this study.

A similar relationship was found in a large general population dataset (N = 7363), where a decrease in prevalence of paranoia was found to be associated with increasing levels of happiness (Koyanagi, 2017). This paper used only one validated question about happiness to measure wellbeing so may lack sensitivity. Additionally, Freeman and colleagues' (2014) findings from their non-clinical control group found higher levels of paranoia were associated with lower levels of wellbeing (r = -.44, p < .001).

Therefore, these papers indicate a negative relationship between persecutory ideation and SWB in non-clinical populations.

Clinical sample

Three papers investigated the relationship between persecutory ideation and SWB in a clinical sample. Two cross-sectional studies with people with psychiatric diagnoses including schizophrenia and schizoaffective disorder (Freeman et al., 2014; 2019), found higher levels of paranoia were associated with lower levels of psychological wellbeing (r = -.3, p < .001 and r = -.29, p < .001 respectively).

However, a paper with inpatients with similar diagnoses found a more complex relationship between persecutory ideation and psychological wellbeing (Valiente et al., 2012). In the first step of their regression analysis, persecutory ideation was not found to be a significant predictor of wellbeing (β = 0.02, p = .81). In the moderation analysis, it was found that the interaction between persecutory ideation and cognitive self-consciousness, as measured by the Metacognition Questionnaire (Wells & Cartwright-Hatton, 2004), explained 15.1% of the variance in wellbeing ($\Delta F(1, 108) = 19.05$, p < .001). It was found that there

was a negative relationship between persecutory ideation and subjective psychological wellbeing at low levels of cognitive self-consciousness, but a positive relationship between persecutory ideation and subjective psychological wellbeing at high levels of cognitive self-consciousness. However, as all participants were inpatients, this study may not be representative of all people with higher levels of persecutory ideation.

The Pearson's correlation coefficients reported in three of the five papers investigating SWB ranged from -.29 to -.44 (Freeman et al., 2014; 2019; Wickham et al., 2014). This suggests there is a moderate negative relationship between persecutory ideation and SWB (Cohen, 1988).

Therefore, these papers tend to indicate a generally negative relationship between persecutory ideation and SWB in clinical populations.

Differences between people with and without a diagnosis of psychosis

Three papers included participants with a diagnosis of psychosis and a general population control group (Freeman et al., 2014; Valiente et al., 2010; 2012) and one paper compared participants with psychosis to people with other psychiatric diagnoses (Lasalvia et al., 2002). One paper (Valiente et al., 2010) found that compared to a control group with no history of mental health difficulties, inpatients with current persecutory beliefs had significantly higher levels of persecutory ideation ($F(1, 77) = 27.75$; $p < .001$, $\eta^2 = 0.29$) and lower satisfaction with life ($F(1,77) = 17.97$; $p = .001$, $\eta^2 = 0.19$).

In contrast, a similar paper (Valiente et al., 2012) found no differences between that inpatients with current persecutory beliefs and participants with no history of mental health difficulties on any psychological wellbeing scale ($p > 0.05$; Valiente et al., 2012). There were differences between the groups demographically and the group with persecutory beliefs were the only inpatients during the study, which may have affected their SWB.

This paper included a group of outpatients with a diagnosis of depression and no history of persecutory delusions (Valiente et al., 2012). Differences were calculated between the three groups on persecutory ideation (Wilk's lambda = 0.47, $F = 23.98$, $p < .001$, $\eta^2 = .31$ for depression and persecutory ideation overall and $\eta^2 = .20$ for persecutory ideation) and subjective psychological wellbeing (Wilk's lambda = 0.81, F (12, 240) = 2.21, $p < .012$, $\eta^2 = .10$). No significant differences were found between the group with persecutory beliefs and the group with depression on the measure of persecutory ideation ($t < 1$), but for wellbeing, the depressed group scored lower on the autonomy subscale (t (86) = 2.67, $p < .026$, $\eta^2 = .06$) and the self-acceptance subscale (t(86) = 3.21, $p < .005$, $\eta^2 = .14$). Neither of these papers (Valiente et al., 2010; 2012) compared the strength of the relationship of persecutory ideation and wellbeing or life satisfaction between the clinical and non-clinical groups.

Freeman and colleagues (2014) found higher levels paranoia were associated with lower levels of wellbeing in both their clinical and non-clinical samples. However, this relationship was stronger for the non-clinical group ($r = -.44$, $p < .001$) than the clinical group ($r = -.30$, $p < .001$). The mean wellbeing score of the clinical group of participants with current persecutory delusions was significantly lower than the general population control group (t(494) = 18.0, $p < .001$). The authors of the study noted that while the control group was not matched with the clinical group, they were matched with previously published data from the general population, including for levels of paranoia (Freeman et al., 2014).

Relationship between persecutory ideation and quality of life

Nineteen datasets reported across 25 papers included a measure of QoL. The most common measures in these datasets were the WHO Quality of Life - Short Form (Chen et al., 2012; Fellinger et al., 2005; Tang & Thomas, 2020; WHOQOL, 1998) and the Medical Outcomes Study Short form – 36 (Jin et al., 2012; Kjellqvist et al., 2016; Oznur et al., 2015;

Ware & Sherbourne, 1992). Two papers included a measure of life satisfaction using different scales (Koivumaa-Honkanen et al., 2011; Valiente et al., 2010)

Non-clinical sample

Eleven papers included analysis of the relationship between persecutory ideation and QoL in participants without a diagnosis of psychosis. Paranoia was found to be negatively correlated to QoL in non-clinical samples involving participants who have used heroin treated with methadone (r = -.47, p < .01; Chen et al., 2012), participants who used marijuana (r = -.40, p < .001; Liao et al., 2019), participants with symptoms they attributed to electronics (r_s = -.56, p < .001; Kjellqvist et al., 2016) and a general population group (r_s = -.50, p < .001; Kjellqvist et al., 2016). Similarly, higher levels of paranoid ideation were associated with lower QoL in participants diagnosed with primary paroxysmal kinesigenic dyskinesia (β = -8.6, p < .001; Tian et al., 2017), participants who were deaf (r = -.18, p < .05, Fellinger et al., 2005) and participants with temporal lobe epilepsy (r = -.52, p = .007, Strutt et al., 2011).

Similarly, a paper with participants with suspected depression (Koivumaa-Honkanen et al., 2011) found lower paranoid ideation in individuals who rated themselves as satisfied with life compared to those who were dissatisfied at both baseline ($U(N_{satisfied} = 46, N_{Dissatisfied} = 93) = -4.07$, p < .001) and 6-year follow-up ($U(N_{satisfied} = 94, N_{Dissatisfied} = 27) = -3.86$, p < .001).

Contrasting findings were found across two papers involving participants accessing treatment for obesity. Donini et al. (2020) found a significant negative correlation between paranoid ideation and health-related QoL in men (r_s = -.42, p < .001) and women (r_s = -.50, p < .001). However, Tambelli et al. (2017) found paranoid ideation was not significantly associated with obesity-related QoL in a sample of men (β = 0.49, p > 0.05) or women (β = -

0.13, $p > .05$). Several concerns of quality were identified for both papers (Donini et al., 2020; Tambelli et al., 2017).

In two papers, no significant relationship was found between paranoid ideation and QoL in participants with psychogenic nonepileptic seizures (Strutt et al., 2011) and with the mental component of health-related QoL in living liver donors ($r = -.157$, $p = .408$; Jin et al., 2012). However, one of the papers was lower in quality (Strutt et al., 2011) and both may have been under-powered due to their small samples ($n = 30$ and $N = 71$ respectively). Similarly, Tang and Thomas' (2020) regression analysis of participants from the general population showed that paranoid ideation predicted environmental QoL ($\beta = -0.13$, $p = .029$) but not total QoL ($\beta = -0.06$, $p = .333$) or any other QoL domains.

The remaining paper found paranoid ideation had a positive effect on the role limitations domain of QoL, due to the physical health QoL subscale score, for military personnel with higher levels of psychopathology ($\beta = 0.68$, $p = .001$; Oznur et al., 2015). It was suggested by the authors of the paper that occupational and financial motivational factors and how short the task period of the sampling group was may have contributed to this finding (Oznur et al., 2015). The paper did not find significant associations between paranoid ideation and other domains of QoL.

Therefore, seven of these papers indicate a negative relationship between persecutory ideation and QoL in non-clinical populations, while four papers did not find a significant relationship between persecutory ideation and total QoL. The quality of these studies was varied, with three high in quality (Kjellqvist et al., 2016; Tang & Thomas, 2020; Tian et al., 2017) and one lower in quality (Strutt et al., 2011).

Clinical sample

Seven datasets across 13 papers included analysis of the relationship between persecutory ideation and QoL in a clinical sample. A negative relationship was found between paranoia and QoL in four papers involving inpatient and outpatient samples using initial cross-sectional data (r = -.30, p < .05, Bow-Thomas et al., 1999; r = -.48, p < .01, Huppert & Smith, 2005; r_s = -.49, $p \geq .40$, Lasalvia et al., 2002; r = -.27, p < .001, Ritsner, 2003b). Similarly, a negative correlation was found between persecutory ideation and life satisfaction among inpatients and a non-clinical control group (r = -.32, p < .05; Valiente et al., 2010).

Additionally, Bow-Thomas et al. (1999) found a greater negative correlation between paranoia and QoL at follow-up, five to nine months following discharge from hospital (r = -.41, p < .01). However, this study may have been underpowered due to the small sample size (N = 45). Also, as participants in all of these studies were initially inpatients, this may not be representative of all people with higher levels of persecutory ideation.

Results from two longitudinal datasets (across five papers) found changes in paranoia were significantly associated with changes in QoL (Bow-Thomas et al., 1999; Ritsner et al., 2003b; 2003c; 2006; 2011; 2012). Bow-Thomas et al. (1999) found a negative correlation between changes in paranoia and changes in QoL at follow-up, five to nine months after discharge from hospital (r = -.50, p < .001). Paranoia was found to explain a small portion (6%) of the variance in QoL during the acute phase of illness in their forward stepwise regression of symptom subscales of the Brief Psychiatric Rating Scale (BPRS; Lukoff, Nuechterlein & Ventura, 1986) and Negative Symptom Assessment (Alphs, Summerfelt, Lann & Muller, 1989), $F_{3, 41}$ = 5.02, p = .01.

Similarly, Ritsner and colleagues (2011) found paranoid symptoms predicted changes in general QoL at 10 years follow-up, β = -0.31, F = 17.3, Partial R^2 = 20%, p < .001. Correspondingly, in another analysis by Ritsner and colleagues (2014), during follow-up, paranoia predicted membership of poor versus good QoL outcome group.

However, while paranoid symptoms predicted changes in general QoL at approximately 16 months follow-up for all participants with a diagnosis of schizophrenia (β = -0.14, Partial R^2 = 0.028, p < .001; Ritsner et al., 2003c) and participants who remained inpatients (β = -0.30, Partial R^2 = 12.7%, p < .009; Ritsner et al., 2006), paranoia did not account for additional variance in QoL when adjusting for other factors such as distress and coping styles (Ritsner et al., 2006). Therefore, it is not clear whether paranoia was a predictor of unique variance in QoL in the dataset reported by Ritsner and colleagues (2003c; 2011; 2012; 2014).

One paper reported mixed findings in the relationship between the paranoia / belligerence factor and QoL (Nakagawa & Hayashi, 2013). In this paper paranoia / belligerence, as measured by the Japanese version of the PANSS (Kay Opler & Lindenmayer, 1988), was not found to be significantly correlated with QoL (r = .22, p > .05). However, multiple stepwise regression analyses found that the paranoia / belligerence symptom cluster, indicated as a factor, was associated with greater subjective QoL (β = 0.29, p < .01).

This positive relationship between the paranoid/ belligerence symptom cluster and subjective QoL is contrary to the findings of the studies reported earlier in this review. However, this study may also have been underpowered due to the small sample size (N = 66) and as all participants were older, female inpatients, there may be limited scope to generalise the findings.

The remaining paper with participants attending an outpatient psychiatric day hospital did not find a significant association between paranoid ideation and global life satisfaction (Kentros et al., 1997). However, this paper was low in quality and may have been underpowered due to a small sample size (N = 21).

Therefore, five datasets reported across 11 papers indicated a negative relationship between persecutory ideation and QoL in clinical populations.

Meta-analysis of persecutory ideation and quality of life

Nine papers, comprising of 860 participants, that reported Pearson correlation coefficients of the relationship between persecutory ideation and QoL were included in a meta-analysis. Six of these papers reported the total QoL score which was used in the meta-analysis (Bow-Thomas et al., 1999; Huppert & Smith, 2005; Liao et al., 2019; Nakagawa & Hayashi, 2013; Ritsner et al., 2003b; Strutt et al., 2011). Three of these papers reported the separate subscales of QoL, thus the scores for each subscale were pooled in separate initial Hedges-Olkin meta-analyses to calculate a pooled correlation coefficient for each paper to use in the overall meta-analysis (Chen et al., 2012; Fellinger et al., 2005; Jin et al., 2012).

The result of the Hedges-Olkin random effects correlation meta-analysis showed that persecutory ideation was negatively correlated with QoL, pooled correlation = -0.280, 95% CI = -0.406 to -0.143, Z = -3.933, $p < 0.001$ (Figure 2). The result of the pool analysis showed lower persecutory ideation had a relationship with QoL with notable heterogeneity (I^2 = 74.66%, Cochran Q = 31.568 (df = 8), $p < .001$). This indicates there is a moderate negative correlation between persecutory ideation and QoL (Cohen, 1988). The standardized effect, variance and weights of each included study is reported in Table 8.

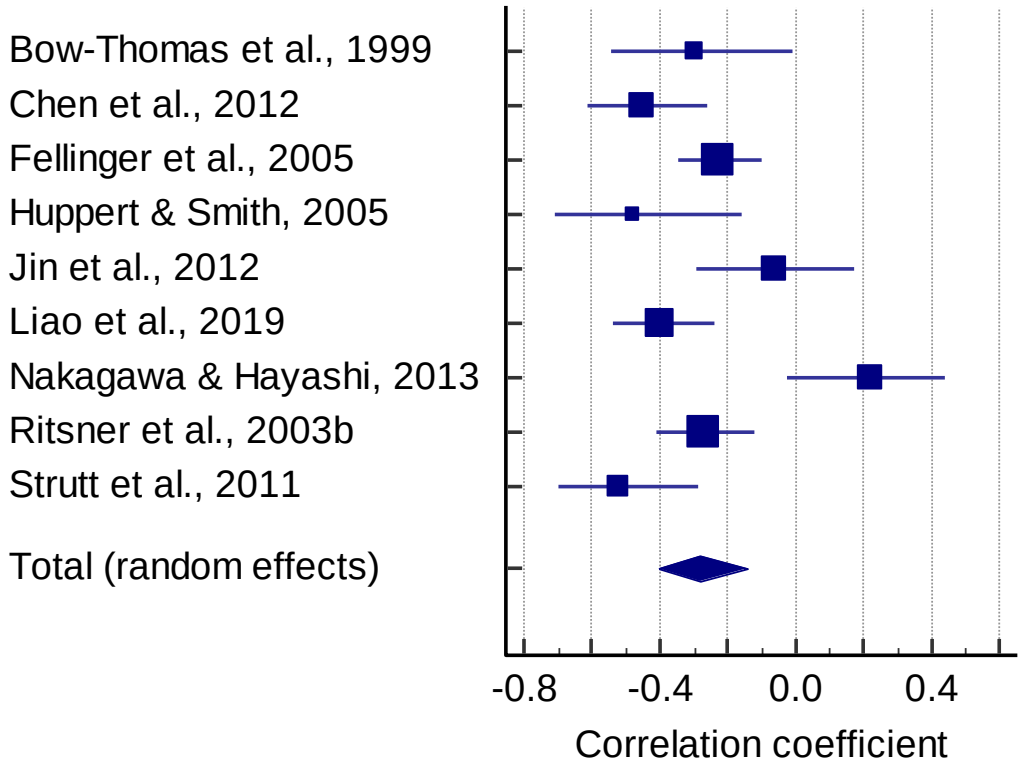

Figure 2. Hedges-Olkin random effects correlation meta-analysis forest plot. Correlations and 95% confidence intervals for each included study of correlation meta-analysis.

Table 8

Standardized results of correlation meta-analysis

Study	Sample	Standardized effect	95% CI	% Weights
Bow-Thomas et al., 1999	Clinical	-0.300	-0.546 to -0.00708	9.27
Chen et al., 2012	Non-clinical	-0.455	-0.615 to -0.259	11.34
Fellinger et al., 2005	Non-clinical	-0.226	-0.345 to -0.100	14.01
Huppert & Smith, 2005	Clinical	-0.480	-0.710 to -0.158	7.82
Jin et al., 2012	Non-clinical	-0.0616	-0.291 to 0.174	11.02

Liao et al., 2019	Non-clinical	-0.400	-0.539 to -0.240	12.69
Nakagawa & Hayashi, 2013	Clinical	0.220	-0.0233 to 0.439	10.76
Ritsner et al., 2003b	Clinical	-0.270	-0.408 to -0.120	13.32
Strutt et al., 2011	Non-clinical	-0.520	-0.696 to -0.285	9.78

The bias assessment funnel plot was largely symmetrical (Figure 3), and the Begg-Mazumdar (Kendall's tau = -0.167, p = .532) and Egger bias tests (=-0.758, p = .748) were not significant. This suggests that there is not significant publication bias, however this should be interpreted with caution due to the small number of included papers and their heterogeneity.

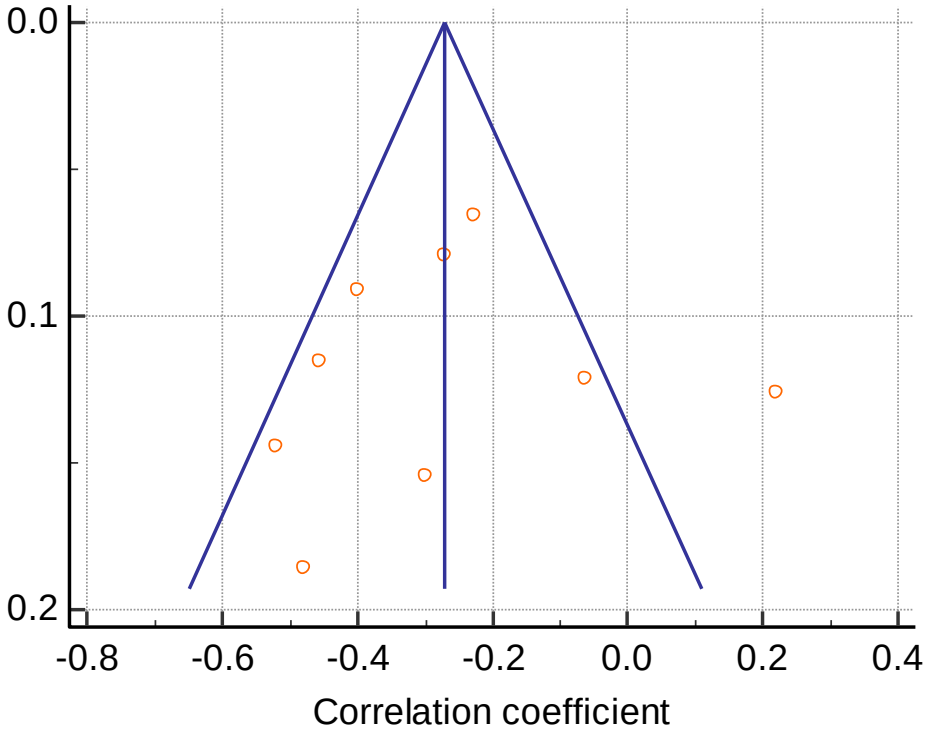

Figure 3. Bias assessment plot. Bias assessment plot of Fisher Z (correlation) and standard error of included studies in correlation meta-analysis.

All of the papers that reported Pearson correlation coefficients of the relationship between persecutory ideation and QoL were included in the meta-analysis for completeness, however these papers were of varying quality. One paper was of high quality but there were concerns of possible non-response bias (Liao et al., 2019). Two papers were of low quality due to possible concerns about non-response bias and the representativeness of the sample and selection process (Strutt et al., 2011) and possible non-response bias and inadequate description of methods and results (Huppert & Smith, 20005). Additionally, among some of the papers there were concerns in relation to non-response bias (Fellinger et al., 2005), the representativeness of the sample frame (Nakagawa & Hayashi, 2013) and the selection process (Bow-Thomas et al., 1999; Fellinger et al., 2005; Jin et al., 2012; Ritsner et al., 2003b). Therefore, there may be limited scope to generalise the findings of the meta-analysis due to the methodological limitations of most of the included papers.

Differences between people with and without a diagnosis of psychosis

One paper (Lasalvia et al., 2002) found no significant differences between a group of participants with a diagnosis of psychosis and participants with diagnoses of other mental health difficulties in the mean scores for paranoid ideation ($p = .12$) and mean total scores for QoL ($p = .07$). Additionally, while a negative correlation between persecutory ideation and QoL was found for both groups, this relationship was stronger among participants without psychosis ($r_s = -.62$, $p < .05$) compared to group with psychosis ($r_s = -.49$, $p < .05$). Although, the authors of the paper reported that the sample selection may not have been representative of the population (Lasalvia et al., 2002).

Variables influencing the relationship between persecutory ideation and quality of life

Only two of the included papers identified possible mediators or moderators between persecutory ideation and wellbeing or QoL (Valiente et al., 2012; Ritsner et al., 2003b). As

reported above, Valiente et al. (2012) found that cognitive self-consciousness moderates the relationship between persecutory ideation and psychological wellbeing. They found that when self-consciousness was high, higher levels of persecutory ideation were associated with higher levels of psychological wellbeing. The interaction between persecutory ideation and cognitive self-consciousness explained an additional 15% of variance in wellbeing ($\Delta F(1, 108) = 19.05$, $p < .001$), compared to the two variables separately ($\Delta R^2 = .001$, $\Delta F(2, 109) = 0.057$, $p = .94$). It was suggested that this may indicate that cognitive self-consciousness is a strategy that maintains SWB in people with higher persecutory ideation. The authors of the paper theorise that this may maintain a defensive self, which is protective of wellbeing in the short term (Valiente et al., 2012).

Ritnser et al. (2003b) found that perceived QoL was moderately negatively associated with the paranoid symptom cluster ($r = -.27$, $p < .001$). This relationship between paranoid symptoms and QoL was found to be mediated by avoidant coping ($\Delta\beta = .28$). It is suggested that this means coping strategies may reduce or prevent the deteriorating effects of paranoid symptoms on subjective QoL.

Discussion

This review aimed to investigate the relationship between persecutory ideation and both SWB and QoL. Most included papers focused on self-reported QoL ($n = 18$). Datasets involving people with clinical and non-clinical levels of persecutory ideation were included and compared, as this experience has been found to exist on a continuum within the general population. To the author's knowledge, this is the first attempt to synthesize and review literature investigating the broader concepts of SWB and QoL in the context of persecutory ideation, as previous reviews have focused specifically on paranoia and self-esteem (Kesting & Lincoln, 2013; Murphy et al., 2018) or QoL in psychosis generally (Eack & Newhill, 2007; Pinikahana et al., 2002). It was hoped that the review would also identify additional

psychological factors that may influence the relationship between persecutory ideation and SWB and QoL.

The relationship between persecutory ideation and both SWB and QoL

The first question this review sought to answer was whether people with higher levels of persecutory ideation have lower levels of SWB and QoL. Of the 24 unique datasets included in the review, 19 data sets (reported across 25 papers) found significant negative relationship between persecutory ideation and SWB or QoL. This suggests that people with higher levels of persecutory ideation and experience lower levels of both SWB and QoL.

Two of the remaining papers found a positive relationship between persecutory ideation and some aspects of QoL (Nakagawa & Hayashi, 2013; Oznur et al., 2015) and three found non-significant relationships (Jin et al., 2012; Kentros et al., 1997; Tambelli et al., 2017). Some of these findings were reported in lower quality papers.

A meta-analysis comprised of the nine papers that reported a Pearson correlation coefficient between persecutory ideation and total QoL was completed. A pooled correlation of -0.280 was found, which indicates there is a moderate negative correlation between persecutory ideation and QoL (Cohen, 1988). Therefore, there is greater empirical evidence that the relationship between persecutory ideation and QoL is negative.

The assessments of publication bias indicated there is not significant publication bias, however this should be interpreted with caution due to the small number of included papers and their heterogeneity. Additionally, there were methodological limitations found in most of the included papers, particularly in relation to the representativeness of the samples and possible non-response bias, so there may be limited scope to generalise the findings of the meta-analysis

The small number of papers that included a measure of SWB prevented the use of meta-analysis to calculate a pooled correlation coefficient for the relationship between persecutory ideation and SWB. The Pearson's correlation coefficients reported in three of the papers investigating SWB ranged from -.29 to -.44 (Freeman et al., 2014; 2019; Wickham et al., 2014). This suggests there is also a moderate negative relationship between persecutory ideation and SWB (Cohen, 1988). This means the relationship between persecutory ideation and both SWB and QoL appear similar in direction and strength, which supports the literature suggesting the concepts of SWB and QoL closely overlap (Camfield & Skevington, 2008). However, this should be interpreted with caution due to the small number of studies that examined persecutory ideation and SWB specifically. Thus, further research is needed to draw firmer conclusions regarding the strength of these relationships. Also, as most of the included papers used cross-sectional designs, more longitudinal research needs to be conducted to provide evidence of causal direction between persecutory ideation and both QoL and SWB.

The findings of a negative relationship between persecutory ideation and both SWB and QoL is also consistent with previous research investigating the relationship between persecutory ideation and concepts that are distinct but related to SWB or QoL. For example, two systematic reviews have found a negative relationship between persecutory ideation and self-esteem (Kesting & Lincoln, 2013; Murphy et al., 2018), which has been found to be a significant predictor of SWB (Diener, 1984). Previous research has also found persecutory ideation is associated with increased levels of emotional distress and depression (Freeman et al., 2001; Mehl et al., 2014; Vorontsova et al., 2013). These findings were likely to be consistent with a negative relationship between persecutory ideation and SWB, as SWB is thought to include higher levels of positive affect and happiness than negative affect (Diener, 2000; Duy & Yıldız, 2019).

Similarly, several negative outcomes have been found to be associated with persecutory ideation, such as greater social withdrawal and increased hospital admissions (Freeman, 2016). It is probable that there is a relationship between these negative outcomes and lower SWB or QoL. This is in line with previous research that has found hospital admissions can affect the social networks of individuals experiencing psychosis (Holmes-Eber & Riger, 1990) and there is an association between social support and SWB (Appau, Churchill & Farrell, 2019; Pinto, 2006). However, further research is needed to explore these relationships.

Clinical and non-clinical levels of persecutory ideation

The papers in this review included clinical and non-clinical samples, which suggests the relationships between persecutory ideation and SWB and QoL are negative within the general population, as well as when persecutory ideation reaches a clinically significant level. This partly answers the second question this review sought to investigate: whether there is a difference in the relationship between persecutory ideation and SWB or QoL between people whose persecutory ideation has been classified as "delusional" and those with a lower level of persecutory ideation. However, few papers directly compared participants with clinical and non-clinical levels of persecutory ideation.

Two papers found the negative correlation between persecutory ideation and SWB or QoL was stronger for a non-clinical control group (Freeman et al., 2014) and a group with a diagnosis of "non-psychotic" disorder (Lasalvia et al., 2002), compared to participants with current persecutory delusions. These findings are consistent with the general trend of correlations across most of the included studies. This suggests that the negative correlation between persecutory ideation and SWB or QoL may be weaker for people with higher levels of persecutory ideation. This supports the idea that persecutory ideation can partially serve a

protective function; although, persecutory ideation largely demonstrated an overall association with lower SWB and QoL.

These findings should be interpreted with caution and more research is needed to draw firmer conclusions regarding the differences in the relationship between SWB or QoL and persecutory ideation in the context of psychosis and other mental health difficulties, compared with people without mental health difficulties.

Variables influencing the relationship between persecutory ideation and wellbeing

Another aim of this review was to identify variables that may influence the relationship between persecutory ideation and SWB or QoL. Two papers identified variables that appear to have an enhancing effect on SWB or QoL in the context of persecutory ideation, but not enough papers included analyses of other psychological variables to fully answer this question.

Cognitive self-consciousness was found to moderate the relationship between persecutory ideation and wellbeing (Valiente et al., 2012). When there are high levels of cognitive self-consciousness, there is a positive relationship between persecutory ideation and SWB, but this relationship is negative when cognitive self-consciousness is low. It was suggested by the study's authors that this indicates cognitive self-consciousness may be a strategy used by individuals with higher levels of persecutory ideation to maintain wellbeing.

In the only paper to investigate potential mediators, the use of distraction coping strategies was found to mediate the relationship between paranoid symptoms and QoL, (Ritsner et al., 2003b). The authors of this paper suggested that this means using distraction coping strategies partly avoids the worsening of QoL due to persecutory ideation. However, as the data in this paper is cross-sectional, causation cannot be determined.

Therefore, more research is needed to consider variables that may influence the relationship between persecutory ideation and both SWB and QoL. As it is stated earlier in this review, there is considerable research investigating the relationship between persecutory ideation and self-esteem (Kesting & Lincoln, 2013; Murphy et al., 2018). This literature has identified some potential moderators, such as deservedness (belief that perceived persecution is deservedness) and experience of stigma associated with psychosis (Kesting & Lincoln, 2013). Given the strong correlation between self-esteem and SWB (Diener, 1984), it is plausible that these factors will also influence the relationship between persecutory ideation and SWB, and possibly QoL.

Quality of included papers

This review also sought to compare the methodological quality of the included papers. In line with the inclusion criteria of the review, each paper included was published in a peer-reviewed journal and utilised validated measures. However, the critical appraisal using the AXIS critical appraisal tool (Downes et al., 2016) of included papers found the papers were of varying quality. All papers that met the inclusion criteria were included for completeness, but caution is required in drawing conclusions from studies that may have methodological concerns and limited scope for generalising their findings.

Concerns around the samples included in the studies were identified for many of the papers. Only one paper included a sample size calculation and as there were a large variance in the number of participants across the datasets, some papers may have been underpowered. It has been acknowledged that underpowered studies continue to be completed in psychological research and this may be related to the number of hypotheses researchers seek to test in each study (Maxwell, 2004). Problems with the use of power calculations in applied research have been identified and alternative solutions to increasing power in addition to

consideration of sample size have been proposed, such as optimising research design and reducing measurement error (Baguley, 2004).

Similarly, there were concerns about the representativeness of the samples in several of the papers. One notable difference between papers was whether participants with persecutory ideation were receiving inpatient or outpatient services during the studies. This could reflect a difference in severity of persecutory ideation and hospital admissions may have other impacts on SWB and QoL (Holmes-Eber & Riger, 1990). Therefore, further research investigating the differences in SWB and QoL in people with persecutory ideation in relation to inpatient treatment may be beneficial. This consideration may also be important for research investigating other mental health difficulties.

Methodological limitations

A limitation of this review is that broad concepts of SWB, psychological wellbeing, happiness, QoL and life satisfaction have all been included. There is considerable literature supporting the overlapping nature of these concepts, which has suggested that happiness, psychological wellbeing and life satisfaction are dimensions of both SWB and QoL (Camfield & Skevington, 2008; Diener & Diener, 2009; Pu et al., 2017; Rey et al., 2011; Yuki et al., 2013). While some authors have suggested that the concepts of SWB and QoL are almost synonymous, there are some theories and evidence that they are distinct concepts (Dierner & Suh, 1997; Duy & Yıldız, 2019; Pinto, 2017; White, Gaines & Jha, 2012) and may need to be examined independently. As no empirical research has compared the concepts of SWB and QoL (Pinto, 2017), further research is needed to investigate whether there are significant differences or distinct dimensions in these concepts.

Similarly, there was variance in concepts and measures used within the included studies to consider persecutory ideation. Most of the studies (17 datasets reported across 23

papers) included a measure of "paranoia" or "paranoid ideation", compared to four papers which included a measure of persecutory ideation. While paranoia and persecutory ideation have been found to be overlapping concepts, there has been a suggestion that the term "paranoia" has been used more broadly in the literature and may include other unfounded beliefs (Freeman & Garety, 2000). As most of the studies found a similar, significant negative relationship between the variables, it may be that the relationship with persecutory ideation and paranoia is similar.

The AXIS critical appraisal tool (Downes et al., 2016) used in the review was designed to appraise cross-sectional studies. While most of the included papers reported cross-sectional data, two of the included datasets included longitudinal data, so there may other aspects of the quality of these papers that was not appraised.

Another limitation is that the meta-analysis only included papers where Pearson's correlation coefficients for the cross-sectional relationship between persecutory ideation and quality of life were available. While other papers included in this systematic review considered the relationship between persecutory ideation and quality of life, these did not include data from analyses that could be transformed to include in the meta-analysis, such as standardised mean differences. For example, four papers included Spearman's rho (Donini et al., 2020; Kjellqvist et al., 2016; Lasalvia et al., 2002; Tang & Thomas, 2020), which is an imperfect estimate of Pearson's correlation based on ranked data rather than raw scores, and therefore it was not possible to transform the effect sizes to include in the correlation meta-analysis. As such, there may be limits to the external validity of the meta -analysis as it did not include data all papers (Rodríguez-Barranco, Tobías, Redondo, Molina-Portillo & Sánchez, 2017).

Additionally, unpublished data was not sought for inclusion in the review, so a minimum level of quality was ensured for included papers. This means due to publication bias, the sample of publications may be biased towards significant effects and the pooled

correlation coefficient may be inflated. However, the assessments of publication bias of the papers included in the meta-analysis were not significant.

Theoretical and clinical implications

While the negative relationship with SWB or QoL was found to be weaker for those whose persecutory ideation was at a level considered "delusional" compared to nonclinical persecutory ideation in two papers (Freeman et al., 2014; Lasalvia et al., 2002), the overall findings of the review generally do not support the theory that persecutory ideation has a positive effect in relation to SWB and QoL (Bentall et al., 1994; 2001; Kinderman & Bentall, 1997).

The findings of some of the papers suggest that the relationship between persecutory ideation and QoL can be affected by other factors (Ritsner et al., 2003b; Valiente et al., 2012) and persecutory ideation may have different relationships with different aspects of QoL (Oznur et al., 2015). Thus, further research is needed to consider other factors that may influence this relationship and whether there may be protective functions of persecutory ideation. This may be particularly important in considering targets for interventions and ways to improve SWB and QoL for individuals experiencing persecutory ideation accessing support from mental health services. For example, it would be important to understand if there are any positive functions or perceptions of persecutory ideation for an individual before seeking to reduce this experience, to avoid further negative impact on SWB (Morrison et al., 2004). If persecutory ideation and avoidant coping styles are resulting in higher levels of wellbeing (Ritser et al, 2003b), it may be beneficial to support individuals to enhance their current coping strategies or develop alternative strategies (Lysaker, Bryson, Marks, Greig & Bell, 2004).

The finding that persecutory ideation is negatively associated with SWB and QoL in both clinical and non-clinical samples provides further support that persecutory ideation is common and exists on a continuum (Elahi et al., 2017). As this relationship has been found in individuals with mental health difficulties, with and without a diagnosis of psychosis, it may be beneficial for mental health services to consider assessing the presence and impact of persecutory ideation for a wider range of people. This may identify individuals who would benefit from specific psychological interventions, such as CBT techniques to reduce distressing persecutory ideation (Freeman et al., 2015; Morrison et al., 2004).

Additionally, there is some evidence the negative relationship between persecutory ideation and SWB or QoL may be stronger for people without a history of mental health difficulties (Freeman et al., 2014; Lasalvia et al., 2002). Thus, interventions in mental health services would not be accessed by many of the people affected by persecutory ideation. Therefore, other interventions may be helpful to reduce the negative impact of persecutory ideation. It may be beneficial to consider ways of reducing factors that have been found to be associated with the development of persecutory ideation at all levels. For example, previous research has identified social factors involved in the development of persecutory ideation, including neglect, physical abuse and insecure attachment in childhood (Bentall et al., 2012; Pickering et al., 2008; Sitko et al., 2014). This means interventions to support the development of secure attachments and reduce neglect and physical abuse could have additional far-reaching benefits, including reduced experiences of persecutory ideation and greater SWB. Further research in this area is needed to investigate the effects of attachment-focused interventions on persecutory ideation, SWB and QoL.

Conclusions

The relationships between persecutory ideation and both SWB and QoL likely overlap. Most of the included papers suggest that higher levels of persecutory ideation are

associated with reduced SWB and QoL in both clinical and non-clinical samples. It may be helpful for mental health services to consider assessing SWB and QoL, in addition to psychological distress and symptoms of mental illness. Further research is needed to investigate psychological factors that may influence these relationships. Assessing for persecutory ideation could be important in deciding which specific psychological interventions are likely to be beneficial for people whose persecutory ideation reaches a level that could be classified as delusional, as well as people experiencing other mental health difficulties. Further research is needed to consider wider interventions to reduce the development of persecutory ideation in the general population, to reduce negative impacts on SWB and QoL.

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*included in narrative synthesis. **included in narrative synthesis and meta-analysis.

Chapter Two

Exploring the Relationship between Persecutory Ideation and Subjective Wellbeing, Sense of Coherence and Cognitive Fusion in the General Population.

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Abstract

Persecutory ideation is associated with negative outcomes, including increased distress and reduced quality of life. Limited work has empirically examined psychological factors that might influence the relationship between persecutory ideation and subjective wellbeing (SWB). **Objectives:** This study aimed to investigate the relationship between persecutory ideation and SWB in the general population. It was predicted that a) persecutory ideation will predict reduced SWB; b) persecution deservedness, cognitive fusion and sense of coherence (SoC) would explain additional variance in SWB beyond the level of persecutory ideation; c) the negative relationship between persecutory ideation and SWB would be stronger among people with lower levels of deservedness and higher levels of cognitive fusion; d) SoC would moderate the relationship between lower deservedness and lower SWB; e) people who have accessed support from mental health services would have lower levels of deservedness, SoC and SWB. **Design:** A cross-sectional, between-groups design was used. **Methods:** A sample of 108 participants were recruited through adverts and social media to complete an online survey consisting of standardised measures. **Results:** Persecutory ideation was found to be negatively associated with SWB. While significant correlations were found between persecutory ideation and all the psychological variables assessed, only SoC significantly predicted additional variance in SWB beyond persecutory ideation. The predicted interaction effects were not found. Participants who had accessed services were found to have higher levels of persecutory deservedness, and lower SoC and SWB. **Conclusions:** It may be helpful to seek to increase SoC when providing psychological interventions to individuals experiencing persecutory ideation.

Introduction

Persecutory ideation refers to thoughts that an individual will experience deliberate harm from others (Freeman & Garety, 2000). These thoughts are experienced by up to 18.6% of people in the general population per year (Elahi, Algorta, Varese, McIntyre & Bentall, 2017; Freeman et al., 2011). There is evidence that persecutory ideation exists on a spectrum and is reported by 90% of people experiencing first episode psychosis (Moutoussis, Williams, Dayan & Bentall, 2007). Persecutory ideation has been found to be associated with emotional distress, social withdrawal and hospital admissions (Freeman, 2016).

The term *persecutory delusions* tends to be used to refer to these beliefs of persecution when they are false, cause a significant level of distress and are sustained despite the conflicting beliefs of others (World Health Organization [WHO], 2018). However, there is disagreement about the use of the term *delusions* and whether these are qualitative different to other strongly held beliefs (Bentall, Corcoran, Howard, Blackwood & Kinderman, 2001; British Psychological Society [BPS], 2017). The term *paranoia* has at times been used interchangeably with persecutory ideation or delusions but has been also been used more broadly to refer to ordinary suspiciousness and other types of distressing beliefs (Bentall et al., 2001; Freeman & Garety, 2000).

Numerous psychological theories have been proposed to explain the experience of persecutory ideation (Bentall et al., 2001). One theory suggests that paranoia is related to an exaggeration of the self-serving bias (Kinderman & Bentall, 1997). This means people tend to attribute positive events to themselves, but negative events are attributed to other people. This bias has been found to be common in people experiencing psychosis as well as in the general population. Due to this, it has been theorised that paranoia may protect individuals against threats to their self-esteem and low mood (Bentall et al., 1994; Bentall et al., 2001).

However, evidence of this is inconsistent as studies have reported varying levels of self-esteem in people with persecutory ideation (Murphy et al., 2018).

Trower and Chadwick (1995) proposed there are two types of paranoia, which can be differentiated by how much an individual believes that they deserve the persecution they perceive they are experiencing. This theory accounts for varying levels of self-esteem as they suggest that there are different ways in which people can appraise a threat to their sense of self, which lead to different defences.

The first type of appraisal is coined “bad me” paranoia, which happens when an individual believes other people are justifiably negatively evaluating them (Trower & Chadwick, 1995). These individuals experience higher levels of deservedness of persecution, which means that they believe that they deserve the perceived persecution due to negative self-perceptions. This results in defensive responses, such as hypervigilance and avoidance to reduce shame and prevent further negative evaluations. The second type is “poor me” paranoia, which happens when an individual perceives other people’s evaluations as a threat of rejection and unwarranted persecution (Trower & Chadwick, 1995). This is characterised by a low level of persecution deservedness and results in the person defensively attributing failures to other people and making negative appraisals of the other person. This serves to protect the individual’s own self-esteem.

Research has indicated that the level of persecution deservedness an individual perceives is linked to mood and varies over time. One study found “bad me” paranoia is related to greater low mood, particularly following exposure to social stress, compared to “poor me” paranoia (Udachina, Bentall, Varese & Rowse, 2017). While “bad me” paranoia is commonly found in the general population, “poor me” paranoia is more common in people with higher levels of persecutory ideation that are of clinical significance (Melo, Corcoran, Shryane & Bentall, 2009). This also means that “poor me” paranoia appears to be related

reduced sensitivity to social stress and therefore may protect against certain forms of distress (Melo et al., 2009). This would suggest that lower levels of persecution deservedness would be found in people who have accessed support from mental health services, so may also be associated with lower overall sense of wellbeing, despite some possible protective functions in relation to self-esteem.

There has been relatively little research investigating the associations between persecutory ideation and subjective wellbeing. Subjective wellbeing (SWB) is an individual's perception of their emotional, psychological and social wellbeing (Deci & Ryan, 2006). It has been proposed that mental health or SWB and mental illness exist on two separate but related continua, whereby wellbeing can range from "flourishing" to "languishing" (Westerhof & Keyes, 2010; Keyes, 2014; Keyes, 2002).

There have been a small number of studies that have investigated the relationship between persecutory ideation and SWB. One study found that higher levels of paranoia were associated with lower levels of wellbeing in both clinical and non-clinical groups (Freeman et al., 2014). However, another study in an inpatient setting (Valiente, Prados, Gómez & Fuentenebro, 2012) found people with higher levels persecutory ideation, had similar levels of psychological wellbeing compared with the general population, but only when they also had high levels of cognitive self-consciousness (i.e. they tend to monitor and concentrate on their own thoughts).

Thus while some possible protective functions of persecutory ideation have been proposed, it is acknowledged that for many people these are distressing experiences and the aim of traditional interventions for psychosis have been to reduce or eliminate these experiences (Bloy, Oliver & Morris, 2011). CBT for psychosis (CBTp) has been recommended based on growing evidence of its efficacy (NICE, 2013). However, a recent meta-analysis found that while CBTp led to changes in delusions post-therapy, these changes

may not be maintained afterwards and they were not statistically significant compared to treatment as usual at follow up (Mehl, Werner & Lincoln, 2015). Additionally, there is not clear evidence of the relationship between reduced positive symptoms and social recovery (Bloy et al., 2011).

These challenges have led to a growing interest in the potential application of third-wave interventions to improve wellbeing for individuals experiencing difficulties such as voice hearing and persecutory ideation (Louise, Fitzpatrick, Strauss, Rossell & Thomas, 2018). One such intervention is Acceptance and Commitment Therapy (ACT). Rather than symptom reduction, ACT focuses on changing an individual's relationship with their unwanted internal experiences and enhancing psychological flexibility. This refers to the ability to be open to internal and external experiences, accept the present moment and choose actions consistent with one's values (Pankey & Hayes, 2003).

Psychological flexibility is suggested to be a fundamental aspect of psychological health and wellbeing. Six components of psychological flexibility have been proposed; contacting the present moment, self as context, acceptance, cognitive defusion, values, and committed action (Hayes, Hayes, Strosahl & Wilson, 2012). In contrast, psychological inflexibility is associated with reduced wellbeing, measured by increased negative affect and lower life satisfaction (Mazzucchelli & Purcell, 2015). Psychological inflexibility is also associated with numerous psychological difficulties, including anxiety and depression (Kashdan & Rottenberg, 2010). Similarly, avoidant coping styles, indicative of lower psychological flexibility, have been found to predict persecutory ideation in the general population (Melo & Bentall, 2010).

Cognitive fusion is a component of psychological inflexibility which refers to the tendency to become entangled with one's thoughts and believe them as fact (Bolderston et al., 2018). This means an individual's behaviour becomes excessively led by their thoughts and

attempts to control them, rather than responding flexibly to circumstances and which can make it more difficult to consider alternative perspectives (Gillanders et al., 2014). Cognitive fusion is theorised to have a role in many psychological difficulties and ACT aims to increase cognitive defusion to promote psychological flexibility (Hayes et al., 2012).

A brief ACT intervention was found to reduce believability of both delusions and voice hearing (indicative of reduced cognitive fusion) and fewer hospital readmissions for people with psychosis receiving inpatient treatment in a randomised trial, compared to treatment as usual (Bach & Hayes, 2002). Thus, cognitive fusion has been proposed to worsen the experience of persecutory ideation through increased denial that these are "symptoms" and increased likelihood of hospitalisation. However, the intervention did not lead to reductions in the distress caused by these experiences, therefore further research is needed to investigate the relationship between cognitive fusion and SWB, and it is likely other variables will also affect the relationship between persecutory ideation and wellbeing (Bach & Hayes, 2002).

Sense of coherence (SoC) is a construct that is linked to salutogenesis; a theory and research perspective that aims to increase understanding of the origins of health rather than illness (Antonovsky, 1987). SoC is purported to be comprised of subcomponents including comprehensibility, meaningfulness and manageability (Antonovsky, 1987). This refers to the extent to which an individual has feelings of confidence that they have the resources to meet the demands of their internal and external environments, they feel these environments are understandable and predictable, and demands are perceived as meaningful challenges rather than obstacles to evade (Olsson, Hansson, Lundblad & Cederblad, 2006).

It is suggested that SoC results in better general health (Antonovsky, 1987). In terms of associations with persecutory ideation, a study in an inpatient setting found that the intensity of individuals' delusions was negatively associated with SoC (Bergstein, Weizman

& Solomon, 2008). At follow-up, while their symptoms were considered to be in remission, participants showed a reduction in SoC. This suggests that clinically significant levels of persecutory ideation may help individuals to make sense of anomalies in their internal and external environments and thus increase coherence among some individuals (Bergstein et al., 2008). Similarly, previous research has found high levels of meaning in life in people who were experiencing delusions (Roberts, 1991).

Aims of the current study

The current study aims to address the dearth of research considering psychological factors that might affect the relationship between persecutory ideation and SWB. Valiente et al. (2012) focused on the persecution subscale of the persecution and deservedness scale (PaDS; Melo et al., 2009) in their moderation analysis, but did not analyse the influence of deservedness. The effect of beliefs about the experience of persecution, such as the level of perceived deservedness, on the relationship between levels of persecutory ideation and levels of SWB is not known. For example, having higher levels of deservedness (i.e. “bad me” paranoia) may lead to an increased sense of coherence related to the experience of persecution, as the persecution may be more comprehensible and meaningful for people who believe they deserve this, than for people who perceive they are experiencing unjustified persecution. In this way, higher levels of deservedness and SoC may combine to protect against lower levels of SWB.

Additionally, higher levels of cognitive fusion (i.e. believing thoughts as facts) could influence the relationship between level of persecutory ideation and SWB. Indeed, it is plausible that the predicted negative relationship between persecutory ideation and wellbeing may be stronger for people who become cognitively entangled with their thoughts. This would be consistent with previous research which has found psychological inflexibility is associated with lower wellbeing (Mazzucchelli & Purcell, 2015).

Thus, a new theoretical model is proposed and tested that examines the roles of cognitive fusion, deservedness and SoC in the relationship between persecutory ideation and SWB (Figure 1).

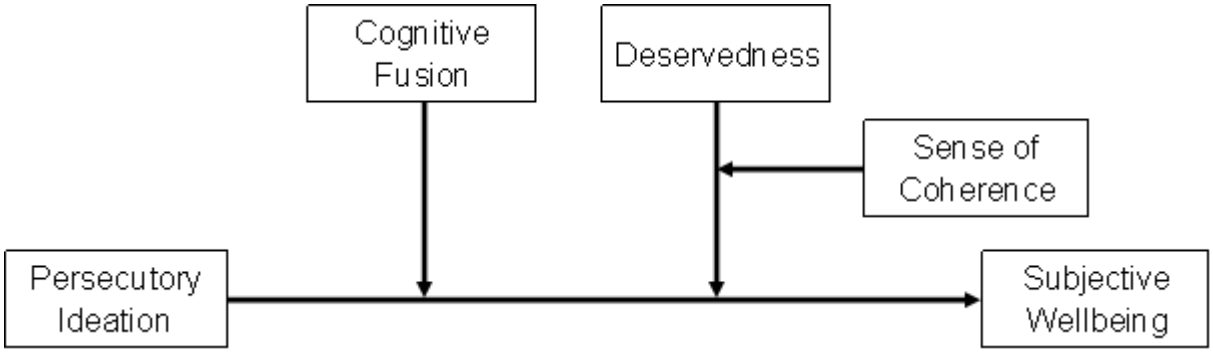

Figure 1. Conceptual model of persecutory ideation and subjective wellbeing. This figure shows the hypothesised relationships between persecutory ideation, subjective wellbeing and possible moderators.

Hypotheses

1. It is predicted there will be a negative relationship between persecutory ideation and SWB.
2. It is predicted that cognitive fusion, deservedness and SoC will explain additional variance in levels of SWB beyond level of persecutory ideation.
3. It is predicted that the negative relationship between persecutory ideation and SWB will be stronger among people with lower levels of deservedness and higher levels of cognitive fusion.
4. It is predicted that SoC will moderate the relationship between lower deservedness and lower SWB.
5. It is predicted that people who have accessed support from mental health services will have lower deservedness, lower SoC and lower SWB.

Design

A cross-sectional, between-groups design was used in this study. Ethical approval for this study was granted by the University of Liverpool (Appendix E).

Methods

Participants and procedure

Participants from the general population were recruited via advertisements through social media and the University of Liverpool (Appendix F). The inclusion criteria for the study were: adult over the age of 18, ability to speak English and access to the internet. People with and without a history of mental health difficulties were invited to participate.

A priori power analyses were conducted using G*Power 3.1.9.2 (Faul, Erdfelder, Lang & Buchner, 2007). It was indicated that a minimum of 129 participants were needed to detect the expected medium effect size ($f^2 = .15$) using multiple regression to calculate R^2 increase with four predictors of a total of four variables with critical $\alpha \leq .05$, and power of 80%. For the moderation analysis with three predictors and two interaction terms, to detect a medium effect size ($f^2 = .15$) with critical $\alpha \leq .05$, and power of 80%, 138 participants were needed.

In total, 127 people consented to take part in the study. Data was analysed from the 108 participants who fully completed the study questionnaires. Participants who did not complete the study were comparable in demographics to those who completed the study. Most of the participants identified as female (84.3%), White British (85.2%) and living in the UK (90.7%). Mental health diagnoses were reported by 24.1% of participants and included people reporting diagnoses of depression (*n*=20), anxiety (*n*=12), OCD (*n*=6), PTSD (*n*=3), bipolar disorder (*n*=3), borderline personality disorder (*n*=3) and anorexia nervosa (*n*=1).

Some participants (*n* = 15) identified more than one mental health diagnosis. Demographic information for participants is presented in Table 1.

Table 1

Demographics of participants

Demographic	Category	*n*	%
Gender	Female	91	84.3%
	Male	16	14.8%
	Not specified	1	0.9%
Age	18 – 24	6	5.6%
	25 – 34	60	55.6%
	35 – 44	22	20.4%
	45 – 54	12	11.1%
	55 – 64	6	5.6%
	65 and over	2	1.9%
Highest level of education	GCSEs or equivalent	12	11.1%
	A-Levels or equivalent	16	14.8%
	University undergraduate	30	27.8%
	University post-graduate	39	36.1%
	Doctoral degree	9	8.3%
	Not specified	2	1.9%
Access to mental health services	Currently accessing	16	14.8%

	Previously accessed	37	34.3%
	Never accessed	53	49.1%
	Not specified	2	1.9%
Self-reported having received a mental health diagnosis	Yes	26	24.1%
	No	77	71.3%
	Not specified	5	4.6%
Have a physical health condition that affects wellbeing	Yes	21	19.4%
	No	85	78.7%
	Not specified	2	1.9%

Paper copies of the study advertisement were displayed at the University of Liverpool and electronic versions were shared via Twitter and Facebook. The advertisements contained a link to a webpage with further information about the study, including their right to withdraw and details of support services available (Appendix G). All participants provided informed consent (Appendix H). Participants were then asked to provide demographic details and completed the questionnaires online. Participants had the option to enter a prize draw for one of three £50 gift cards as compensation for their time.

Measures

*Persecutory ideation***.** The persecution and deservedness scale (PADS; Melo et al., 2009) assesses an individual's perceived level of persecution and deservedness (Appendix I). It consists of 10 items regarding persecution, rated on a scale between 0 (certainly false) and 4 (certainly true). There are 10 corresponding items to assess how much the person believes they deserve each item of persecution, rated on a scale between 0 (not at all) and 4 (very much). For example, "If you've answered 2 or above to the last question, please answer to the following question: Do

you feel like you deserve others to plot against you?" It has been validated with student and patient populations and the persecution subscale has been found to have a Cronbach's alpha of .84 and the deservedness subscale has an inter-class correlation of .43 (Melo et al., 2009). For this study, Cronbach's alpha was .898 for the persecution subscale and the deservedness subscale had an inter-class correlation of .530.

Sense of coherence. The shorter version of the sense of coherence scale (SOC-13; Antonovsky, 1993; Appendix J) assesses an individual's orientation to life and the extent to which they view their environment as comprehensible, meaningful and manageable (Eriksson & Lindström, 2005). It is comprised of 13 items, rated on a 7-point scale from 1 (never happened) to 7 (always happened). It has been found to have a Cronbach's alpha between .70 and .92. Cronbach's alpha for this study was .886.

*Cognitive fusion***.** The state cognitive fusion questionnaire (SCFQ; Bolderston et al., 2018) is a brief self-report questionnaire which measures cognitive fusion (Appendix K). It includes seven statements, rated on a scale between 1 (completely untrue) and 7 (completely true). This version of the questionnaire was developed to be more sensitive to variance over shorter periods of time than the cognitive fusion questionnaire. It has been found to have good validity and internal reliability, and a Cronbach's alpha of .95 (Bolderston et al., 2018). Cronbach's alpha for this study was .954.

Subjective wellbeing. The Mental Health Continuum Short Form (MHC-SF; Keyes 2006) is a shortened version of the MHC Long Form, consisting to 14 self-report items to assess psychological, emotional and social wellbeing (Appendix L). The frequency with which participants have experienced feelings of wellbeing over the past two weeks is rated on a 6-point scale, from "never" to "everyday". Total scores range from 0 to 70, with greater scores indicating higher levels of SWB and can be categorized into languishing, moderately mentally healthy or flourishing. It has been found to have a Cronbach's alpha of .89, suggesting good internal

consistency (Lamers, Westerhof, Bohlmeijer, ten Klooster & Keyes, 2011). Cronbach's alpha for this study was .934.

Statistical analyses

The mean scores for each questionnaire were calculated and used for all analyses. Pearson's correlation and Spearman's rho analyses were used to determine the correlations between each of the variables. Multiple and hierarchical regression analyses and moderated multiple regression analyses were used to assess possible predictors of SWB. Independent t-tests were conducted to compare responses of participants with current or past involvement with mental health services, and those who had never accessed services. All statistical analyses were completed using IBM SPSS for Windows, Version 25 and the PROCESS macro (version 3) in SPSS (Hayes, 2018). Results were considered statistically significant when $p \leq .05$.

Results

Preliminary analysis and assumption checks

The means and standard deviations for each questionnaire are presented in Table 2. Examination of P-P plots indicated residuals for each regression model were normally distributed. Kolmogorov-Smirnov tests showed that data for persecutory ideation ($D(108) = .141$, $p = .001$), deservedness ($D(92) = .181$, $p < 0.001$) and cognitive fusion ($D(108) = .132$, $p < .001$), were not normally distributed. The mean scores for SWB ($D(108) = .079$, $p = .128$) and SoC ($D(108) = .068$, $p = .422$) were normally distributed. Regression is robust to violations of data normality and does not make assumptions of the distribution of predictors or dependent variable, only the residuals, so as per Hayes (2018) this did not affect the main analyses.

Table 2

Means and standard deviations of variables assessed

Variable	*N*	*M*	*SD*
Persecutory ideation	108	2.40	0.97
Deservedness	92	1.78	0.86
Cognitive fusion	108	3.30	1.72
Sense of coherence	108	4.42	1.07
Subjective wellbeing	108	4.01	1.03

Pearson correlation was calculated for SWB and SoC. As the data for the remaining variables was not normally distributed, Spearman's Rho was used to calculate correlations between each of the remaining independent variables. The results are presented in Table 3. Significant correlations were found between all of the variables except deservedness and cognitive fusion. Ninety-one participants were included in the correlation analyses of deservedness as completion of this subscale was dependent on a threshold being met on the corresponding items relating to levels of persecution. All other analyses included 108 participants.

Table 3

Correlations between variables

Variable	Deservedness	Cognitive fusion	Sense of coherence	Wellbeing
Persecutory ideation	.418 †**	.668§**	-.754§**	-.496§**
Deservedness		.183†	-.344 †**	-.254 †*
Cognitive fusion			-.665§**	-.486§**

Sense of coherence	.700 ‡**

† *n* = 91. ‡ Pearson correlation. § Spearman Rho. *$p < .05$. **$p < .01$.

Hierarchical regression assessing predictors of wellbeing

Using the enter method, hierarchical regression was conducted to investigate possible predictors of SWB (hypotheses one and two). There was no violation of independence of errors (Durban-Watson = 2.085) and no concerns about multicollinearity (*VIF* Range = 1.000 to 2.649).

Persecutory ideation was entered as a predictor at step 1 and the outcome variable was SWB. The first regression model predicted approximately 20% of variance in SWB, $F(1, 89) = 21.790$, $p < .001$, $R^2 = .197$ (Table 4). These results indicated that persecutory ideation was a significant predictor of SWB.

At step 2, deservedness, cognitive fusion and SoC were added to the model as predictors and explained approximately an additional 29% of variance in SWB. This change in R^2 was significant, $F(3, 86) = 16.283$, $p < .05$. The individual predictors were examined further (Table 4). When all four predictors were included in the step 2 of the regression model, persecutory ideation was no longer a significant predictor of SWB. Only SoC was a significant predictor of SWB, $t = 6.242$, $p < .001$, $sr^2 = .232$. This means SoC explained approximately 23% unique variance in SWB.

Table 4

Results of hierarchical regression assessing predictors of wellbeing

Source	B	*t*	*P*	sr^2†	R^2	*Adj.* R^2	ΔR^2
Step 1					.197	.188	.197

Constant		17.496	.000***				
Persecutory ideation	-.443	-4.668	.000***	.196			
Step 2					.488	.464	.291
Constant		.664	.509				
Persecutory ideation	.111	0.886	.378	.005			
Deservedness	-.029	-0.326	.745	.001			
Cognitive fusion	-.052	-0.455	.651	.001			
Sense of coherence	.728	6.242	.000***	.232			

***$p < .001$. †*semi-partial correlation*

Moderated multiple regression assessing persecutory ideation, deservedness and cognitive fusion predicting wellbeing

Model 2 of the PROCESS extension (Hayes, 2012) in SPSS v24 (IBM Corp, 2016) was used to test hypothesis three. This model allows the investigation of conditional effects for two moderators entered simultaneously. The independent variable was persecutory ideation and the dependent variable was SWB. The two moderators were deservedness and cognitive fusion. All variables were centred to the mean.

The overall regression model predicted approximately 26% of variance in SWB, $F(5, 85) = 6.107$, $p < .001$, $R^2 = .264$. Results of the moderated multiple regression indicated that persecutory ideation did not significantly predict SWB, nor did deservedness (Table 5). Cognitive fusion was found to be a significant negative predictor of SWB. The persecutory

ideation x deservedness interaction did not significantly predict wellbeing nor did the persecutory ideation x cognitive fusion interaction.

Table 5

Results of moderated multiple regression assessing persecutory ideation, deservedness and cognitive fusion predicting subjective wellbeing

Source	β	*SE*	*t*	*p*	*LLCI*†	*ULCI*‡
Constant	3.910	.120	32.735	.000***	3.673	4.148
Persecutory ideation	-0.194	.170	-1.139	.258	-0.532	0.145
Deservedness	-0.178	.133	-1.337	.185	-0.443	0.087
Persecutory ideation x deservedness	0.102	.120	0.847	.399	-0.137	0.341
Cognitive fusion	-0.187	.076	-2.469	.016*	-0.338	-0.037
Persecutory ideation x cognitive fusion	-0.055	.070	-0.780	.437	-0.195	0.085

***** $p < .05$. *** $p < .001$. † Lower limit of 95% confidence interval. ‡ Upper limit of 95% confidence interval

Moderated multiple regression assessing deservedness and SoC predicting wellbeing

Model 1 of the PROCESS extension (Hayes, 2012) in SPSS v24 (IBM Corp, 2016) was used to test hypothesis four. This model allows the investigation of conditional effects for one moderator. The predictor was deservedness of persecution and the outcome variable was SWB. The moderator was SoC. All variables were centred to the mean.

The overall regression model predicted approximately 48% of variance in wellbeing, $F(3, 87) = 27.250$, $p < .001$, $R^2 = .484$ (Table 6). Results of the moderated multiple regression

indicated that SoC was a significant positive predictor of SWB. Deservedness did not significantly predict SWB, nor did the deservedness x SoC interaction.

Table 6

Results of moderated multiple regression assessing deservedness and sense of coherence predicting subjective wellbeing

Source	β	*SE*	*t*	*p*	*LLCI*	*ULCI*
Constant	3.905	.084	46.550	.000***	3.738	4.071
Deservedness	0.019	.105	0.181	.857	-0.189	0.227
Sense of coherence	0.723	.087	8.325	.000***	0.551	0.896
Deservedness x sense of coherence	0.045	.090	0.500	.618	-0.134	0.223

***$p < .001$.

T-tests comparing people who have and have not accessed mental health services

Independent samples t-tests were conducted to compare levels of persecution, deservedness, SoC and wellbeing between those participants who have and have not accessed mental health services (hypothesis five). Significant differences were found between the groups for all variables, as shown in Table 7.

Table 7

Results of t-tests comparing people who have and have not accessed mental health services

Source	**Have accessed mental health services**			**Have not accessed mental health services**			***t***	***df***	***p***	***d***
	n	Mean	*SD*	*n*	Mean	*SD*				

Persecutory ideation	53	2.82	0.97	53	1.98	0.77	4.951	104	.000**	0.959
Deservedness	50	1.95	0.92	41	1.57	0.76	2.102	89	.038*	0.450
Sense of coherence	53	3.85	0.93	53	4.95	0.88	-6.222	104	.000**	0.663
Subjective wellbeing	53	3.58	0.93	53	4.47	0.94	-4.884	104	.000**	1.215

* $p < .05$. **$p < .001$

Discussion

Persecutory ideation is common and associated with several negative outcomes, including increased distress and reduced quality of life (Freeman, 2016). This study aimed to examine the relationship between persecutory ideation and SWB, and psychological factors that may influence this relationship, as there has been little empirical research in this area to date. It was found that all variables investigated were significantly correlated with both persecutory ideation and SWB. There was a positive relationship between SWB and SoC. Deservedness and cognitive fusion were each negatively correlated with SWB.

Findings from the study support hypothesis one; persecutory ideation was negatively associated with SWB and independently predicted levels of SWB. This adds to previous research that found persecutory ideation was associated with lower SWB (Freeman et al., 2014).

Contrary to hypothesis two, when levels of persecutory ideation were controlled for, only SoC and not cognitive fusion nor deservedness predicted additional variance in SWB. This finding partially supports hypothesis two as SoC explained approximately 23% additional variance in SWB, beyond the level of persecutory ideation. When SoC was

included, persecutory ideation was no longer a significant predictor of SWB. This suggests that SoC may mediate, rather than moderate, the relationship between persecutory ideation and SWB and possibly warrants further attention in future studies.

Contrary to hypothesis three, only cognitive fusion was a significant negative predictor of SWB. Levels of deservedness did not predict levels of SWB. Thus, higher levels of cognitive fusion predicted lower levels of SWB. Neither levels of cognitive fusion nor deservedness affected the relationship between persecutory ideation and SWB.

The findings that persecutory ideation and cognitive fusion were positively correlated and cognitive fusion was a significant predictor of lower SWB are consistent with previous research that found cognitive fusion may worsen the experience of persecutory ideation (Bach & Hayes, 2002). This is in line with the aim of ACT interventions to reduce cognitive fusion to improve psychological flexibility, which is associated with greater wellbeing (Kashdan & Rottenberg, 2010). However, when cognitive fusion and SoC were included in the analysis, only SoC was found to be a significant predictor of SWB. Thus, the relationship between cognitive fusion and SWB in the context of persecutory ideation may be explained by additional variables, such as SoC.

As cognitive fusion was also found to be negatively correlated with both SoC and SWB in this study, ACT interventions to support individuals with persecutory ideation may increase both SoC and SWB. ACT for psychosis aims to help individuals to defuse (separate themselves) from the content of thoughts, including persecutory ideation, and increase meaningful actions consistent with the person's values (Pankey & Hayes, 2003), which may help to increase how manageable and meaningful one's environment is perceived to be (components of SoC; Antonovsky, 1987). Therefore, this may provide further support for the use of ACT for psychosis and in particular the use of cognitive defusion techniques. Further

research is warranted to investigate the role of cognitive defusion, in improving the wellbeing of people experiencing psychosis and subclinical persecutory ideation.

The findings of the study did not support hypothesis four; SoC did not moderate the relationship between lower levels of deservedness and lower SWB. SoC was a significant positive predictor of SWB, but deservedness did not predict SWB. The finding that higher SoC predicted higher SWB is consistent with previous salutogenesis literature, as SoC is suggested to result in greater health, which is proposed to be a state of wellbeing, rather than merely the absence of illness (Antonovsky, 1987). The significant negative correlations found between SoC and both persecutory ideation and deservedness are also consistent with some previous research findings that suggest the intensity of individuals' delusions are negatively associated with SoC (Bergstein et al., 2008). This could mean that an individual's environment feels more difficult to manage when they perceive others are persecuting them (one component of SoC; Antonovsky, 1987), regardless of whether this persecution is believed to be deserved.

However, previous research findings have suggested a more complex relationship between persecutory ideation and SoC as people experiencing delusions have been found to have high levels of meaning (Roberts, 1991) and when individual's delusions have been considered in remission, they showed a reduction in SoC (Bergstein et al., 2008). Thus, it was predicted that lower persecution deservedness would have a stronger negative relationship with lower SWB if an individual felt their environment was less understandable and meaningful (two of the components of SoC; Antonovsky, 1987), which was not supported by the findings of the current study. While it has not been recommended that the subscales of SoC are empirically investigated separately due to high interrelations (Antonovsky, 1993), investigating the role of meaningfulness specifically may be helpful in the context of persecutory ideation. Additionally, longitudinal research may be beneficial to further

investigate the role of deservedness in the relationship between persecutory ideation and SoC, as deservedness has been found to fluctuate over time (Udachina et al., 2017) and different levels of all three variables have been associated with low mood (Bergstein et al., 2008; Udachina et al., 2017).

People who reported they were currently or had previously accessed mental health services were found to have higher levels of persecutory ideation than those who had not accessed services. As these participants did not report diagnoses of psychosis but a negative association with SWB was still found, this suggests that it may be beneficial to consider assessing and addressing persecutory ideation in people accessing support for more varied difficulties, to help to improve their wellbeing.

It was also predicted that people who have accessed support from mental health services would have lower deservedness, lower SoC and lower SWB. This hypothesis was partly supported as people who reported they had accessed mental health services were found to have higher levels of persecutory ideation and lower levels of SoC and SWB compared to those without a history of mental health difficulties. This suggests it may be beneficial to assess levels of SWB when people access support from mental health services to increase focus on flourishing in addition to working to manage symptoms. This may be particularly important in the context of persecutory ideation as there is some evidence that reduction in symptoms could lead to reduced SWB (Bach & Hayes, 2002). Additionally, assessing and considering how interventions may support increasing SoC may help to improve individuals' SWB. This is in line with conclusions of previous research which have suggested it would be important to consider enhancing individuals' sense of meaningfulness when seeking to reduce experiences of delusions and assessment of SoC could act as a prognostic tool in this context (Bergstein et al., 2008).

This study found a significant negative correlation between persecution deservedness and SWB. This is also consistent with previous research which has found an association between increased deservedness (characterised as “bad me” paranoia”) and low mood (Udachina et al., 2017). However, contrary to the final hypothesis, participants who had accessed mental health services had significantly higher levels of deservedness of perceived persecution compared to those without a history of mental health difficulties. This contrasts to a previous study which found higher levels of deservedness (characterised as “bad me” paranoia) in the general population compared to a clinical sample (Melo et al., 2009). It is possible that this finding is due to the type of mental health difficulties experienced by participants. In the study by Melo and colleagues (2009), participants in the general population were compared to people experiencing psychosis. In the current study, only three participants reported they had received a diagnosis of bipolar disorder and no participants reported a diagnosis of psychosis. In contrast, approximately 77% of participants who reported they had received a mental health diagnosis identified experiencing depression. Therefore, higher levels of deservedness may be related to their low mood (Udachina et al., 2017).

These findings may support the theory that higher levels of deservedness in people who are experiencing psychological distress without psychosis, is a defensive response, protecting against shame when they perceive other people are negatively evaluating them (Trower and Chadwick, 1995). Further research is needed to investigate the level of perceived deservedness experienced by people with persecutory ideation in the context of mental health difficulties other than psychosis. Further attention to the role of low mood is also warranted. This may have implications for planning effective psychological interventions for people experiencing these difficulties, which are likely to negatively affect their mood and SWB.

It is striking that there is a significant relationship between persecutory ideation and SWB in the general population, including among people who have not previously accessed mental health services. Some previous research has suggested this negative relationship between persecutory ideation and wellbeing may be stronger in people without a history of mental health difficulties (Freeman et al., 2014; Lasalvia et al., 2002), who would not be accessing psychological interventions. Thus, it could be beneficial to consider wider interventions to reduce the prevalence of persecutory ideation to lessen the negative impact of this on the population's wellbeing.

This may have important policy implications as a number of social factors have been found to be associated with the development of persecutory ideation at clinical and non-clinical levels. For example, neglect, physical abuse and insecure attachment in childhood have all been associated with persecutory ideation (Bentall et al., 2012; Pickering et al., 2008; Sitko et al., 2014). This could provide further support for the implementation of interventions to safeguard children and to support the development of secure attachments, which could have additional benefits of reducing persecutory ideation and further improving SWB. Further research in this area is needed to investigate the effects of attachment-focused interventions on persecutory ideation and SWB.

Furthermore, over 19% of participants in this study reported physical health difficulties that impacted their wellbeing. Previous research conducted with people with varied physical health concerns including temporal lobe epilepsy (Strutt, Hill, Scott, Uber-Zak & Fogel, 2011), paroxysmal kinesigenic dyskinesia (Tian et al., 2017), obesity (Donini et al., 2020) and living liver donors (Jin et al., 2012), have found persecutory ideation to be associated with reduced quality of life in these populations. Therefore, further research to investigate the interaction between physical health difficulties, persecutory ideation and SWB is warranted.

There are limitations of the current study. Firstly, as the study is cross-sectional, causation cannot be inferred. Further longitudinal research investigating the impact of persecutory ideation and other psychological factors on SWB may be beneficial. Secondly, the sample may not be representative of the general population as it was mostly comprised of white British females and most participants had a high level of educational attainment. Thus, future research may benefit from involving a more representative sample to further explore the relationship between persecutory ideation and SWB in the general population. Additionally, the study may have been underpowered to find all the predicted effects and therefore possible confounding variables, such as age and gender, were not controlled for.

Additionally, there were few participants who reported receiving a diagnosis related to psychosis so it may be that few participants experienced a clinical level of persecutory ideation. Therefore, future research would benefit from specifically targeting participants with clinical levels of persecutory ideation during recruitment, in addition to people from the general population, to further investigate these psychological factors.

Conclusions

This study provided a robust test of the relationship between persecutory ideation and SWB and aimed to address the dearth of literature on potential psychological moderators of this relationship. Higher levels of persecutory ideation were found to predict lower levels of SWB. Deservedness, cognitive fusion and SoC were each significantly correlated with both persecutory ideation and SWB. Significant differences were found in the levels of each of these variables between people who had accessed support from mental health services and those who had not. Thus, these are factors which may be helpful to assess and seek to modify when providing psychological support to people experiencing persecutory ideation, irrespective of their diagnosis. ACT is an intervention that could be beneficial in each of these areas so warrants further research.

The results of the multiple regression and moderated multiple regression analyses did not support the proposed conceptual model of SWB in the context of persecutory ideation. However, SoC was found to be a significant predictor of SWB beyond the level of persecutory ideation. There were a number of limitations to this study which may affect the generalisability of the findings, therefore further research investigating the influence of psychological factors in the relationship between persecutory ideation and SWB is needed with both clinical and non-clinical populations, particularly people with a diagnosis of psychosis.

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World Health Organization. (2018). *International Classification of Diseases for Mortality and Morbidity Statistics (11th Revision).* Retrieved from https://icd.who.int/browse11/l-m/en

Appendices

Appendix A

Psychology and Psychotherapy Author Guidelines

Articles should adhere to the stated word limit for the particular article type. The word limit excludes the abstract, reference list, tables and figures, but includes appendices.

Word limits for specific article types are as follows:

- Research articles: 5000 words
- Review papers: 6000 words

Abstract

Please provide an abstract of up to 250 words. Articles containing original scientific research should include the headings: Objectives, Design, Methods, Results, Conclusions. Review articles should use the headings: Purpose, Methods, Results, Conclusions.

References

References should be prepared according to the *Publication Manual of the American Psychological Association* (6th edition).

Tables

Tables should be self-contained and complement, not duplicate, information contained in the text. Legends should be concise but comprehensive – the table, legend, and footnotes must be understandable without reference to the text. All abbreviations must be defined in footnotes. Footnote symbols: †, ‡, §, ¶, should be used (in that order) and *, **, *** should be reserved for P-values. Statistical measures such as SD or SEM should be identified in the headings.

Figures

Legends should be concise but comprehensive – the figure and its legend must be understandable without reference to the text. Include definitions of any symbols used and define/explain all abbreviations and units of measurement.

Appendix B

Search Strategy and Terms

Psycinfo

Search terms:

SU.EXACT.EXPLODE("Paranoia (Psychosis)") OR paranoi* or persecutory

AND

SU.EXACT.EXPLODE("Well Being") OR Wellbeing OR Well-being OR “Well being” OR Wellness OR “Quality of life” OR Thriving OR Languishing OR Eudemonia OR Eudaimonia OR Eudaemonia

Limits: peer review

Results: 295

Scopus

Search Terms:

Paranoi* OR Persecutory

AND

Wellbeing OR Well-being OR “Well being” OR Wellness OR “Quality of life” OR Thriving OR Languishing OR Eudemonia OR Eudaimonia OR Eudaemonia

Limits:

Source type: journal

Document type: Articles

Language: English

Subject: Psychology, neuroscience, nursing, social sciences, medicine, health professions

Results: 4121

Web of Science

Search Terms:

ALL=(Paranoi* OR Persecutory)

AND

ALL=(Wellbeing OR Well-being OR “Well being” OR Wellness OR “Quality of life” OR Thriving OR Languishing OR Eudemonia OR Eudaimonia OR Eudaemonia)

Limits:

Document type: article

Language: English

Results: 308

PubMed

Search Terms:

Paranoid disorders – exploded thesaurus term

OR Paranoi* OR Persecutory

AND

Wellbeing OR Well-being OR “Well being” OR Wellness OR “Quality of life” OR Thriving OR Languishing OR Eudemonia OR Eudaimonia OR Eudaemonia

Filters applied: Journal Article, Humans, English, Adult: 19+ years, Young Adult: 19-24 years, Adult: 19-44 years, Middle Aged + Aged: 45+ years, Middle Aged: 45-64 years, Aged: 65+ years, 80 and over: 80+ years.

Results: 2037

EMBASE

Search Terms:

Paranoi* OR Persecutory

AND

Wellbeing OR Well-being OR “Well being” OR Wellness OR “Quality of life” OR Thriving OR Languishing OR Eudemonia OR Eudaimonia OR Eudaemonia

Limits used:

Publication type: Article

Age Group: Adult (18 to 64 years), Aged (65+ years),

Other: Human

Language: English language, English

Results: 331

Total results: 7092

Appendix C

AXIS Critical Appraisal Tool

Downes, Brennan, Williams & Dean, 2016

Yes	No	Do not know/Comment

Introduction

1 Were the aims/objectives of the study clear?

Methods

2 Was the study design appropriate for the stated aim(s)?

3 Was the sample size justified?

4 Was the target/reference population clearly defined? (Is it clear who the research was about?)

5 Was the sample frame taken from an appropriate population base so that it closely represented the target/reference population under investigation?

6 Was the selection process likely to select subjects/participants that were representative of the target/reference population under investigation?

7 Were measures undertaken to address and categorise non-responders?

8 Were the risk factor and outcome variables measured appropriate to the aims of the study?

9 Were the risk factor and outcome variables measured correctly using instruments/ measurements that had been trialled, piloted or published previously?

10 Is it clear what was used to determined statistical significance and/or precision estimates? (eg, p values, CIs)

11 Were the methods (including statistical methods) sufficiently described to enable them to be repeated?

Results

12 Were the basic data adequately described?

13 Does the response rate raise concerns about non-response bias?

14 If appropriate, was information about non-responders described?

15 Were the results internally consistent?

16 Were the results for the analyses described in the methods, presented?

Discussion

17 Were the authors' discussions and conclusions justified by the results?

18 Were the limitations of the study discussed?

Other

19 Were there any funding sources or conflicts of interest that may affect the authors' interpretation of the results?

20 Was ethical approval or consent of participants attained?

Appendix D

Excluded full text papers and reasons for exclusion

Abdel-Hafez, K., Mahran, A. M., Hofny, E. R. M., Mohammed, K. A., Darweesh, A. M., & Aal, A. A. (2009). The impact of acne vulgaris on the quality of life and psychologic status in patients from upper Egypt. *International Journal of Dermatology, 48*(3), 280-285. doi:10.1111/j.1365-4632.2009.03838.x

Participants under the age of 18

Al-Krenawi, A., Graham, J. R., & Al Gharaibeh, F. (2011). A comparison study of psychological, family function marital and life satisfactions of polygamous and monogamous women in Jordan. *Community Mental Health Journal, 47*(5), 594-602. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-doi:10.1007/s10597-011-9405-x

Does not investigate relationship between persecutory ideation and wellbeing

Altintepe, L., Levendoglu, F., Okudan, N., Guney, I., Savas Cilli, A., Ugurlu, H., . . . Turk, S. (2006). Physical disability, psychological status, and health-related quality of life in older hemodialysis patients and age-matched controls. *Hemodialysis International, 10*(3), 260-266. doi:10.1111/j.1542-4758.2006.00106.x

Does not investigate relationship between persecutory ideation and wellbeing

Anwar, K., & Waqar, S. (2018). Psychopathological tendencies and quality of life among patients with thalassemia major. *Rawal Medical Journal, 43*(1), 32-38.

Participants under the age of 18

Bak-Klimek, A., Karatzias, T., Elliott, L., & MacLean, R. (2018). The determinants of well-being among Polish economic immigrants. Testing the sustainable happiness model in migrant population. *Journal of Happiness Studies*, *19*(6), 1565-1588.

No persecutory ideation measure

Ballerini, A., Boccalon, R. M., Boncompagni, G., Casacchia, M., Margari, F., Minervini, L., . . . Zanoli, M. (2007). Clinical features and therapeutic management of patients admitted to Italian acute hospital psychiatric units: The PERSEO (psychiatric emergency study and epidemiology) survey. *Annals of General Psychiatry, 6*.

Does not investigate relationship between persecutory ideation and wellbeing

Bardak, S., Demir, S., Aslan, E., Turgutalp, K., Celikcan, H. D., Dolarslan, M. E., . . . Kıykım, A. (2019). The other side of the coin in renal replacement therapies: The burden on caregivers. *International Urology and Nephrology, 51*(2), 343-349. doi:10.1007/s11255-018-2029-0

Does not investigate relationship between persecutory ideation and wellbeing

Barratt, M. S., Roach, M. A., Morgan, K. M., & Colbert, K. K. Adjustment to motherhood by single adolescents. *Family Relations*, 209-215.

Does not investigate relationship between persecutory ideation and wellbeing

Bengtsson-Tops, A., & Hansson, L. (1999). Subjective quality of life in schizophrenic patients living in the community. Relationship to clinical and social characteristics. *European Psychiatry*, *14*(5), 256-263.

Does not investigate relationship between persecutory ideation and wellbeing

Bengtsson-Tops, A., & Hansson, L. (2001). Quantitative and qualitative aspects of the social network in schizophrenic patients living in the community. Relationship to sociodemographic characteristics and clinical factors and subjective quality of life. *International Journal of Social Psychiatry*, *47*(3), 67-77.

No persecutory ideation measure

Bengtsson-Tops, A., & Hansson, L. (2001). The validity of Antonovsky's sense of coherence measure in a sample of schizophrenic patients living in the community. *Journal of Advanced Nursing, 33*(4), 432-438. doi:10.1046/j.1365-2648.2001.01692.x

No persecutory ideation measure

Bergstein, M., Weizman, A., & Solomon, Z. (2008). Sense of coherence among delusional patients: Prediction of remission and risk of relapse. *Comprehensive Psychiatry, 49*(3), 288-296. doi:10.1016/j.comppsych.2007.06.011

No persecutory ideation measure

Black, D. W., Manlick, C. F., Fuortes, L. J., Stein, M. A., Subramanian, P., Thorne, P. S., & Reynolds, S. J. (2014). Psychological distress, job dissatisfaction, and somatic symptoms in office workers in 6 non-problem buildings in the Midwest. *Annals of Clinical Psychiatry, 26*(3), 171-178.

Full text not available

Boyer, L., Richieri, R., Guedj, E., Faget-Agius, C., Loundou, A., Llorca, P. M., . . . Lancon, C. (2013). Validation of a functional remission threshold for the Functional Remission of General Schizophrenia (FROGS) scale. *Comprehensive Psychiatry, 54*(7), 1016-1022. doi:10.1016/j.comppsych.2013.04.008

No persecutory ideation measure

Boyer, L., Simeoni, M. C., Loundou, A., D'Amato, T., Reine, G., Lancon, C., & Auquier, P. (2010). The development of the S-QoL 18: A shortened quality of life questionnaire for patients with schizophrenia. *Schizophrenia Research, 121*(1-3), 241-250. doi:10.1016/j.schres.2010.05.019

Does not investigate relationship between persecutory ideation and wellbeing

Březinová, E., Nečas, M., & Vašků, V. (2017). Quality of life & psychological disturbances in adults with atopic dermatitis in the Czech Republic. *Journal of Biological Regulators and Homeostatic Agents, 31*(2, Supplement 2), 227-233.

Full text not available

Broyd, A., Jolley, S., & Johns, L. (2016). Determinants of subjective well-being in people with psychosis referred for psychological therapy in South London. *British Journal of Clinical Psychology*, *55*(4), 429-440.

No specific persecutory ideation measure

Buskila, D., Ablin, J. N., Ben-Zion, I., Muntanu, D., Shalev, A., Sarzi-Puttini, P., & Cohen, H. (2009). A painful train of events: Increased prevalence of fibromyalgia in survivors of a major train crash. *Clinical and Experimental Rheumatology, 27*(5 SUPPL. 56), S79-S85.

Does not investigate relationship between persecutory ideation and wellbeing

Cannavò, D., Minutolo, G., Battaglia, E., & Aguglia, E. (2016). Insight and recovery in schizophrenic patients. *International Journal of Psychiatry in Clinical Practice, 20*(2), 83-90.

Only uses PANSS totals, no specific paranoia scores reported

Carpiniello, B., Pinna, F., Pillai, G., Nonnoi, V., Pisano, E., Corrias, S., . . . Loviselli, A. (2009). Psychiatric comorbidity and quality of life in obese patients. results from a case-control, study. *International Journal of Psychiatry in Medicine, 39*(1), 63-78.

Does not investigate relationship between persecutory ideation and wellbeing

Cavaggioni, G., Poli, E., Ferri, F., Parlati, L., Monaco, V., Melcore, C., . . . Ginanni Corradini, S. (2017). MELDNa score is associated with psychopathology and reduced quality of life in cirrhotic patients with a liver transplant perspective. *Metabolic Brain Disease, 32*(3), 923-933. doi:10.1007/s11011-017-9987-2

Does not investigate relationship between persecutory ideation and wellbeing

Cavalli, C., Tarzia, V., Marini, M., Gregori, D., Casella, S., Bottio, T., . . . Gerosa, G. (2019). A comparison of quality of life and psychological distress in heart transplantation patients at adult and pediatric ages. *Clinical Transplantation, 33*(5). doi:10.1111/ctr.13335

Does not investigate relationship between persecutory ideation and wellbeing

Chan, G. W., Ungvari, G. S., Shek, D. T., & Leung, J. J. (2003). Hospital and community-based care for patients with chronic schizophrenia in Hong Kong. *Social Psychiatry and Psychiatric Epidemiology*, *38*(4), 196-203.

Suspiciousness measure but not specific persecutory ideation measure

Chan, M. E., & McAllister, D. J. (2014). Abusive supervision through the lens of employee state paranoia. *Academy of Management Review, 39*(1), 44-66. doi:10.5465/amr.2011.0419

No original data

Chan, P. S., Krupa, T., Lawson, J. S., & Eastabrook, S. (2005). An outcome in need of clarity: Building a predictive model of subjective quality of life for persons with severe mental illness living in the community. *American Journal of Occupational*

Therapy, 59(2), 181-190. http://doi.org/10.5014/ajot.59.2.181

Persecutory ideation not investigated

Choi, D. H., Jeong, B. O., Kang, H. J., Kim, S. W., Kim, J. M., Shin, I. S., . . . Yoon, J. S. (2013). Psychiatric comorbidity and quality of life in patients with post-stroke emotional incontinence. *Psychiatry Investigation, 10*(4), 382-387. doi:10.4306/pi.2013.10.4.382

Does not investigate relationship between persecutory ideation and wellbeing

Cohen, C. I., Vengassery, A., & Aracena, E. F. G. (2017). A longitudinal analysis of quality of life and associated factors in older adults with schizophrenia spectrum disorder. *The American Journal of Geriatric Psychiatry*, *25*(7), 755-765.

Does not investigate relationship between persecutory ideation and wellbeing

Čolović, O., Lečić-Toševski, D., Mandić-Maravić, V., & Tošković, O. (2017). Depressive, anxious and somatization symptoms and quality of life in stress-related disorders. *Vojnosanitetski Pregled, 74*(10), 927-931. doi:10.2298/VSP150604263C

Does not investigate relationship between persecutory ideation and wellbeing

Coppola, A., Caccavale, C., Santulli, L., Balestrini, S., Cagnetti, C., Licchetta, L., . . . Striano, S. (2016). Psychiatric comorbidities in patients from seven families with autosomal dominant cortical tremor, myoclonus, and epilepsy. *Epilepsy and Behavior, 56*, 38-43. doi:10.1016/j.yebeh.2015.12.038

Does not investigate relationship between persecutory ideation and wellbeing

Cramer, V., Torgersen, S., & Kringlen, E. Cramer, V., Torgersen, S., & Kringlen, E. (2003). Personality disorders, prevalence, socio-demographic correlations, quality of life, dysfunction, and the question of continuity. *PTT: Persönlichkeitsstörungen Theorie Und Therapie, 7*(3), 189-198.

No paranoia measure, only personality disorder interview

Cramer, V., Torgersen, S., & Kringlen, E. (2006). Personality disorders and quality of life. A population study. *Comprehensive Psychiatry, 47*(3), 178-184 doi:10.1016/j.comppsych.2005.06.002

No paranoia measure, only personality disorder interview

Cramer, V., Torgersen, S., & Kringlen, E. (2007). Socio-demographic conditions, subjective somatic health, axis I disorders and personality disorders in the common population: The relationship to quality of life. *Journal of Personality Disorders, 21*(5), 552-567. doi:10.1521/pedi.2007.21.5.552

No paranoia measure, only personality disorder interview

Dickerson, F. B., Ringel, N. B., & Parente, F. (1998). Subjective quality of life in out-patients with schizophrenia: Clinical and utilization correlates. *Acta Psychiatrica Scandinavica*, *98*(2), 124-127.

No persecutory ideation measure

De Bona, M., Ponton, P., Ermani, M., Iemmolo, R. M., Feltrin, A., Boccagni, P., . . . Burra, P. (2000). The impact of liver disease and medical complications on quality of life and psychological distress before and after liver transplantation. *Journal of Hepatology, 33*(4), 609-615.

Does not investigate relationship between persecutory ideation and wellbeing

De Pasquale, C., Veroux, M., Sinagra, N., Sanfiorenzo, A., Sanzone, A., Trigona, C., . . . Pistorio, M. L. (2016). Patterns of Personality in Living Kidney Donors. *Transplantation Proceedings, 48*(2), 319-322. doi:10.1016/j.transproceed.2015.12.057

Does not investigate relationship between persecutory ideation and wellbeing

Desrosiers, A., Blokhina, E., Krupitsky, E., Zvartau, E., Schottenfeld, R., & Chawarski, M. (2017). Psychiatric symptoms, quality of life, and HIV status among people using opioids in Saint Petersburg, Russia. *Drug and Alcohol Dependence, 172*, 60-65. doi:10.1016/j.drugalcdep.2016.12.007

Does not investigate relationship between persecutory ideation and wellbeing

El-Gabalawy, R., Tsai, J., Harpaz-Rotem, I., Hoff, R., Sareen, J., & Pietrzak, R. H. (2013). Predominant typologies of psychopathology in the United States: A latent class analysis. *Journal of Psychiatric Research, 47*(11), 1649-1657. doi:10.1016/j.jpsychires.2013.07.028

No paranoia measure, only personality disorder measure

Eren, I., Sahin, M., Tunc, S. E., Cure, E., & Civi, I. I. (2006). Psychiatric symptoms and quality of life in patients with behcet's disease. *Neurology Psychiatry and Brain Research, 13*(4), 169-174.

Does not investigate relationship between persecutory ideation and wellbeing

Feola, B., Armstrong, K., Woodward, N. D., Heckers, S., & Blackford, J. U. (2019). Childhood temperament is associated with distress, anxiety and reduced quality of life in schizophrenia spectrum disorders. *Psychiatry Research, 275*, 196-203. doi:10.1016/j.psychres.2019.03.016

No persecutory ideation measure

Freeman, D., & Bentall, R. P. (2017). The concomitants of conspiracy concerns. *Social Psychiatry and Psychiatric Epidemiology, 52*(5), 595-604. doi:10.1007/s00127-017-1354-4

No persecutory ideation measure, looks at conspiracy beliefs specifically

Freeman, D., Bold, E., Chadwick, E., Taylor, K. M., Collett, N., Diamond, R., . . . Waite, F. (2019). Suicidal ideation and behaviour in patients with persecutory delusions: Prevalence, symptom associations, and psychological correlates. *Comprehensive Psychiatry, 93*, 41-47. doi:10.1016/j.comppsych.2019.07.001

Does not investigate relationship between persecutory ideation and wellbeing

Freeman, D., McManus, S., Brugha, T., Meltzer, H., Jenkins, R., & Bebbington, P. (2011). Concomitants of paranoia in the general population. *Psychological Medicine*, *41*(5), 923-936.

Doesn't use a validated measure of wellbeing (some items from different questionnaires to look at different aspects of this).

Fumero, A., Marrero, R. J., & Fonseca-Pedrero, E. (2018). Well-being in schizotypy: The effect of subclinical psychotic experiences. *Psicothema*, *30*(2), 177-182.

Does not investigate relationship between persecutory ideation and wellbeing

Gaite, L., Vázquez-Barquero, J. L., Borra, C., Ballesteros, J., Schene, A., Welcher, B., ... & EPSILON Study Group. (2002). Quality of life in patients with schizophrenia in five European countries: The EPSILON study. *Acta Psychiatrica Scandinavica*, *105*(4), 283-292.

Does not investigate relationship between persecutory ideation and wellbeing

Gelber, E. I., Kohler, C. G., Bilker, W. B., Gur, R. C., Brensinger, C., Siegel, S. J., & Gur, R. E. (2004). Symptom and demographic profiles in first-episode schizophrenia. *Schizophrenia Research*, *67*(2-3), 185-194.

Does not investigate relationship between persecutory ideation and wellbeing, self-report measures not used

Gibbie, T. M., Hides, L. M., Cotton, S. M., Lubman, D. I., Aitken, C., & Hellard, M. (2011). The relationship between personality disorders and mental health, substance use severity and quality of life among injecting drug users. *Medical Journal of Australia, 195*(3 SUPPL.), S16-S21.

Does not investigate relationship between persecutory ideation and wellbeing

Hagen, E., Erga, A. H., Hagen, K. P., Nesvåg, S. M., McKay, J. R., Lundervold, A. J., & Walderhaug, E. (2017). One-year sobriety improves satisfaction with life, executive functions and psychological distress among patients with polysubstance use disorder. *Journal of Substance Abuse Treatment, 76*, 81-87. doi:10.1016/j.jsat.2017.01.016

Does not investigate relationship between persecutory ideation and wellbeing

Hanssen, M., van der Werf, M., Verkaaik, M., Arts, B., Myin-Germeys, I., van Os, J., . . . Kohler, S. (2015). Comparative study of clinical and neuropsychological characteristics between early-, late and very-late-onset schizophrenia-spectrum disorders. *American Journal of Geriatric Psychiatry, 23*(8), 852-862. doi:10.1016/j.jagp.2014.10.007

Does not investigate relationship between persecutory ideation and wellbeing

Hayhurst, K. P., Massie, J. A., Dunn, G., Lewis, S. W., & Drake, R. J. (2014). Validity of subjective versus objective quality of life assessment in people with schizophrenia.

BMC Psychiatry, 14(1). doi:10.1186/s12888-014-0365-x

Does not investigate relationship between persecutory ideation and wellbeing

Hjärthag, F., Helldin, L., Karilampi, U., & Norlander, T. (2010). Illness-related components for the family burden of relatives to patients with psychotic illness. *Social Psychiatry and Psychiatric Epidemiology, 45*(2), 275-283. doi:10.1007/s00127-009-0065-x

Does not investigate relationship between persecutory ideation and wellbeing

Ho, B. C., Nopoulos, P., Flaum, M., Arndt, S., & Andreasen, N. C. (1998). Two-year outcome in first-episode schizophrenia: Predictive value of symptoms for quality of life. *American Journal of Psychiatry, 155*(9), 1196-1201.

Doesn't investigate persecutory ideation specifically

Hofer, A., Benecke, C., Edlinger, M., Huber, R., Kemmler, G., Rettenbacher, M. A., . . . Wolfgang Fleischhacker, W. (2009). Facial emotion recognition and its relationship to symptomatic, subjective, and functional outcomes in outpatients with chronic schizophrenia. *European Psychiatry, 24*(1), 27-32. doi:10.1016/j.eurpsy.2008.06.008

Doesn't investigate persecutory ideation specifically

Holcomb, W. R., & Ivey, W. S. (2017). Religious fundamentalism, humor, and treatment outcomes in individuals in court-mandated substance abuse outpatient treatment. *Psychological Reports, 120*(3), 491-502. doi:10.1177/0033294116687270

Does not investigate relationship between persecutory ideation and wellbeing

Holubova, M., Prasko, J., Hruby, R., Kamaradova, D., Ociskova, M., Latalova, K., & Grambal, A. (2015). Coping strategies and quality of life in schizophrenia: Cross-sectional study. *Neuropsychiatric Disease and Treatment, 11*, 3041-3048. doi:10.2147/NDT.S96559

Does not investigate relationship between persecutory ideation and wellbeing

Humphries, S., King, R., Dunne, M. P., & Nguyen, C. H. (2018). Subjective quality of life and its predictors among people with early psychosis in central Vietnam: A short-term longitudinal study. *International Journal of Culture and Mental Health, 11*(4), 373-388.

No persecutory ideation measure

Hyphantis, T., Kotsis, K., Tsifetaki, N., Creed, F., Drosos, A. A., Carvalho, A. F., & Voulgari, P. V. (2013). The relationship between depressive symptoms, illness perceptions and quality of life in ankylosing spondylitis in comparison to rheumatoid arthritis. *Clinical Rheumatology, 32*(5), 635-644. doi:10.1007/s10067-012-2162-6

Does not investigate relationship between persecutory ideation and wellbeing

Hyphantis, T., Mantis, D., Voulgari, P. V., Tsifetaki, N., & Drosos, A. A. (2011). The psychological defensive profile of primary Sjögren's syndrome patients and its relationship to health-related quality of life. *Clinical and Experimental Rheumatology, 29*(3), 485-493.

Does not investigate relationship between persecutory ideation and wellbeing

Hyphantis, T., Paika, V., Almyroudi, A., Kampletsas, E. O., & Pavlidis, N. (2011). Personality variables as predictors of early non-metastatic colorectal cancer patients' psychological distress and health-related quality of life: A one-year prospective study. *Journal of Psychosomatic Research, 70*(5), 411-421doi:10.1016/j.jpsychores.2010.09.011

Does not investigate relationship between persecutory ideation and wellbeing

Izydorczyk, B., Sitnik-Warchulska, K., Kühn-Dymecka, A., & Lizińczyk, S. (2019). Family and peer resources in relation to psychological condition in patients with paranoid schizophrenia. *Archives of Psychiatry and Psychotherapy, 21*(3), 25-40doi:10.12740/APP/109629

Does not investigate relationship between persecutory ideation and wellbeing

Jung, H. Y., Hwang, S. S. H., Yi, J. S., Kim, Y., & Kim, Y. S. (2010). Clinician-rated functioning and patient-rated quality of life in schizophrenia: Implications of their correspondence for psychopathology and side effects. *Progress in Neuro-Psychopharmacology and Biological Psychiatry, 34*(1), 225-230. doi:10.1016/j.pnpbp.2009.11.012

Does not investigate relationship between persecutory ideation and wellbeing

Kamal, R. M., Dijkstra, B. A. G., de Weert-van Oene, G. H., van Duren, J. A. M., & de Jong, C. A. J. (2017). Psychiatric comorbidity, psychological distress, and quality of life in gamma-hydroxybutyrate-dependent patients. *Journal of Addictive Diseases, 36*(1), 72-79. doi:10.1080/10550887.2016.1214000

Does not investigate relationship between persecutory ideation and wellbeing

Khani, H., Majdi, M. R., Azad Marzabadi, E., Montazeri, A., Ghorbani, A., & Ramezani, M. (2012). Quality of life of iranian β-thalassaemia major patients living on the southern coast of the caspian sea. *Eastern Mediterranean Health Journal, 18*(5), 539-545. doi:10.26719/2012.18.5.539

Does not investigate relationship between persecutory ideation and wellbeing

Konieczyńska, M. J. Z. (2001). Quality of life in schizophrenia: Impact of psychopathology, patients' gender and antipsychotic treatment. *International Journal of Psychiatry in Clinical Practice, 5*(1), 19-26.

Did not investigate persecutory ideation

Korkeila, J., Heikkilä, J., Hansson, L., Sørgaard, K. W., Vahlberg, T., & Karlsson, H. (2005). Structure of needs among persons with schizophrenia. *Social Psychiatry and Psychiatric Epidemiology, 40*(3), 233-239. doi:10.1007/s00127-005-0888-z

Does not investigate relationship between persecutory ideation and wellbeing

Korver-Nieberg, N., Quee, P. J., Boos, H. B., Simons, C. J., Kahn, R. S., Linszen, D. H., . . . Bruggeman, R. (2011). The validity of the DSM-IV diagnostic classification system

of non-affective psychoses. *Australian and New Zealand Journal of Psychiatry, 45*(12), 1061-1068. doi:10.3109/00048674.2011.620562

Does not investigate relationship between persecutory ideation and wellbeing

Kosulwit, L. (2015). Mental health and quality of life among Thai psychiatrists. *Journal of the Medical Association of Thailand, 98*, S28-S37.

Does not investigate relationship between persecutory ideation and wellbeing

Kreinin, A., Krishtul, V., Kirsh, Z., & Menuchin, M. (2015). Clinico-epidemiological comparison of delusion-prominent and hallucination-prominent clinical subgroups of paranoid schizophrenia. *Clinical Schizophrenia and Related Psychoses, 9*(3), 117-124. doi:10.3371/CSRP.KRKR.031513

Does not investigate relationship between persecutory ideation and wellbeing

Kulikov, S. A., Kulikova, A. S., & Куликова, A. C. (2008). Some aspects of studying quality of life of patients with paranoid schizophrenia from perspective of system analysis. *Ekologiya Cheloveka* (4), 23-27.

Full text not available

Laganà, A. S., Condemi, I., Retto, G., Muscatello, M. R. A., Bruno, A., Zoccali, R. A., . . . Cedro, C. (2015). Analysis of psychopathological comorbidity behind the common symptoms and signs of endometriosis. *European Journal of Obstetrics and Gynecology and Reproductive Biology, 194*, 30-33. doi:10.1016/j.ejogrb.2015.08.015

Does not investigate relationship between persecutory ideation and wellbeing

Law, C. W., Chen, E. Y., Cheung, E. F., Chan, R. C., Wong, J. G., Lam, C. L., ... & Lo, M. S. (2005). Impact of untreated psychosis on quality of life in patients with first-episode schizophrenia. *Quality of Life Research, 14*(8), 1803-1811.

Persecutory ideation not investigated

Liu, L., Xiao, Q. F., Zhang, Y. L., & Yao, S. K. (2014). A cross-sectional study of irritable bowel syndrome in nurses in China: Prevalence and associated psychological and lifestyle factors. *Journal of Zhejiang University: Science B, 15*(6), 590-597.

Does not investigate relationship between persecutory ideation and wellbeing

Liu, X. H. (2006). Correlation between mental health and satisfaction with life of home-going peasant-workers. *Chinese Journal of Clinical Rehabilitation, 10*(26), 174-176.

Full text not available

Liu, Y. H., Chen, L., Su, Y. A., Fang, Y. R., Srisurapanont, M., Hong, J. P., . . . Si, T. M. (2015). Is early-onset in major depression a predictor of specific clinical features with more impaired social function? *Chinese Medical Journal, 128*(6), 811-815. doi:10.4103/0366-6999.152654

Does not investigate relationship between persecutory ideation and wellbeing

Lozano, O. M., Rojas, A. J., & Fernandez Calderon, F. (2017). Psychiatric comorbidity and

severity of dependence on substance users: How it impacts on their health-related quality of life? *Journal of Mental Health, 26*(2), 119-126. doi:10.1080/09638237.2016.1177771

Does not have persecutory ideation measure, assesses personality disorder

Lysaker, P. H., Lancaster, R. S., Nees, M. A., & Davis, L. W. (2004). Attributional style and symptoms as predictors of social function in schizophrenia. *Journal of Rehabilitation Research and Development, 41*(2), 225-232. doi:10.1682/JRRD.2004.02.0225

Does not investigate relationship between persecutory ideation and wellbeing

Mankiewicz, P. D., Gresswell, D. M., & Turner, C. (2013). Subjective wellbeing in psychosis: Mediating effects of psychological distress on happiness levels amongst individuals diagnosed with paranoid schizophrenia. *International Journal of Wellbeing, 3*(1).

Paranoid ideation and psychoticism appear to be combined in the analysis

Mannion, A., & Slade, P. (2014). Psychotic-like experiences in pregnant and postpartum women without a history of psychosis. *Schizophrenia Research, 160*(1-3), 118-123. doi:10.1016/j.schres.2014.10.003

Does not look at persecutory ideation specifically, general delusions scale

Nagargoje, A. K., & Muthe, M. K. (2015). Prevalence of anxiety in schizophrenic patients and its impact on quality of life. *International Journal of Scientific Study, 3*(7), 12-17. doi:10.17354/ijss/2015/441

Full text not available

Pagnini, F., Bercovitz, K. E., & Phillips, D. (2018). Langerian mindfulness, quality of life and psychological symptoms in a sample of Italian students. *Health and Quality of Life Outcomes, 16*(1). doi:10.1186/s12955-018-0856-4

Does not investigate relationship between persecutory ideation and wellbeing

Pereira, M., Fialho, R., & Canavarro, M. C. (2014). Prevalence and correlates of emotional distress in HIV/HCV coinfection. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV, 26*(SUPPL. 1), 56-64. doi:10.1080/09540121.2014.906549

Does not investigate relationship between persecutory ideation and wellbeing

Peric, S., Sreckov, M., Basta, I., Lavrnic, D., Vujinic, M., Marjanovic, I., & Rakocevic Stojanovic, V. (2014). Dependent and paranoid personality patterns in myotonic dystrophy type 1. *Acta Neurologica Scandinavica, 129*(4), 219-225. doi:10.1111/ane.12173

Does not investigate relationship between persecutory ideation and wellbeing

Peters, E., Ward, T., Jackson, M., Morgan, C., Charalambides, M., McGuire, P., . . . Garety, P. A. (2016). Clinical, socio-demographic and psychological characteristics in individuals with persistent psychotic experiences with and without a "need for care". *World Psychiatry, 15*(1), 41-52. doi:10.1002/wps.20301

Does not investigate relationship between persecutory ideation and wellbeing

Pot, A. M., Deeg, D. J. H., & VanDyck, R. (1997). Psychological well-being of informal caregivers of elderly people with dementia: Changes over time. *Aging & Mental Health, 1*(3), 261-268. doi:10.1080/13607869757164

Does not investigate relationship between persecutory ideation and wellbeing

Rajaratnam, R., Sivesind, D., Todman, M., Roane, D., & Seewald, R. (2009). The aging methadone maintenance patient: Treatment adjustment, long-term success, and quality of life. *Journal of Opioid Management, 5*(1), 27-37.

Full text not available

Rao, S. S. C., Seaton, K., Miller, M. J., Schulze, K., Brown, C. K., Paulson, J., & Zimmerman, B. (2007). Psychological profiles and quality of life differ between patients with dyssynergia and those with slow transit constipation. *Journal of Psychosomatic Research, 63*(4), 441-449. doi:10.1016/j.jpsychores.2007.05.016

Does not investigate relationship between persecutory ideation and wellbeing

Ringdal, M., Plos, K., Lundberg, D., Johansson, L., & Bergbom, I. (2009). Outcome after injury: Memories, health-related quality of life, anxiety, and symptoms of depression after intensive care. *Journal of Trauma – Injury, Infection and Critical Care, 66*(4), 1226-1233. doi:10.1097/TA.0b013e318181b8e3

Does not investigate relationship between persecutory ideation and wellbeing

Ritsner, M. S., Lisker, A., & Arbitman, M. (2012). Ten-year quality of life outcomes among patients with schizophrenia and schizoaffective disorders: I. Predictive value of disorder-related factors. *Quality of Life Research, 21*(5), 837-847.

Doesn't look specifically at persecutory ideation

Ritsner, M., Modai, I., Endicott, J., Rivkin, O., Nechamkin, Y., Barak, P., ... & Ponizovsky, A. (2000). Differences in quality of life domains and psychopathologic and psychosocial factors in psychiatric patients. *The Journal of Clinical Psychiatry, 61*(11), 880-9.

No separate analysis of paranoia

Rocca, P., Castagna, F., Mongini, T., Montemagni, C., & Bogetto, F. (2010). Relative contributions of psychotic symptoms and insight to quality of life in stable schizophrenia. *Psychiatry Research, 177*(1-2), 71-76. doi:10.1016/j.psychres.2009.01.030

Does not investigate relationship between persecutory ideation and wellbeing

Rodríguez, A., Pérez San Gregorio, M. A., & Rodríguez, A. G. (2005). Psychological repercussions in family members of hospitalised critical condition patients. *Journal of Psychosomatic Research, 58*(5), 447-45. doi:10.1016/j.jpsychores.2004.11.011

Does not investigate relationship between persecutory ideation and wellbeing

Rogers, J., Hengartner, M. P., Angst, J., Aidacic-Gross, V., & Rössler, W. (2014). Associations with quality of life and the effect of psychopathology in a community study. *Social Psychiatry and Psychiatric Epidemiology*, *49*(9), 1467-1473.

Paranoia not analysed separately

Roh, Y. H., Chang, J. Y., Kim, M. U., & Nam, S. K. (2014). The effects of income and skill utilization on the underemployed's self-esteem, mental health, and life satisfaction. *Journal of Employment Counseling*, *51*(3), 125-141.

No persecutory ideation measure

Rössler, W., Aidacic-Gross, V., Haker, H., Rodgers, S., Müller, M., & Hengartner, M. P. (2015). Subclinical psychosis syndromes in the general population: Results from a large-scale epidemiological survey among residents of the canton of Zurich, Switzerland. *Epidemiology and Psychiatric Sciences, 24*(1), 69-77. doi:10.1017/S2045796013000681

Does not investigate relationship between persecutory ideation and wellbeing

Ruini, C., Ottolini, F., Rafanelli, C., Tossani, E., Ryff, C. D., & Fava, G. A. (2003). The relationship of psychological well-being to distress and personality. *Psychotherapy and Psychosomatics*, *72*(5), 268-275.

No persecutory ideation measure

Sahin, A., Bez, Y., Kaya, M. C., Türkcü, F. M., Sahin, M., & Yüksel, H. (2014). Psychological distress and poor quality of life in patients with central serous chorioretinopathy. *Seminars in Ophthalmology, 29*(2), 73-76. doi:10.3109/08820538.2013.793728

Does not investigate relationship between persecutory ideation and wellbeing

Sellers, R., Wells, A., Parker, S., & Morrison, A. P. (2018). Do people with psychosis engage in unhelpful metacognitive coping strategies? A test of the validity of the Cognitive Attentional Syndrome (CAS) in a clinical sample. *Psychiatry Research, 259*, 243-250. doi:10.1016/j.psychres.2017.10.032

Does not investigate persecutory ideation specifically

Shin, J. S., Kwon, Y. N., Choi, Y., Lee, J. Y., Lee, Y. I., Hwang, J. H., . . . Xiong, K. (2019). Comparison of psychiatric disturbances in patients with multiple sclerosis and neuromyelitis optica. *Medicine (United States), 98*(38). doi:10.1097/MD.0000000000017184

Does not investigate relationship between persecutory ideation and wellbeing

Sideli, L., Di Pasquale, A., Barone, M. V., Mulè, A., Prestifilippo, A., Cataldi, S., . . . La Barbera, D. (2017). Association between coping strategies and psychological adjustment after small burn injuries. A cross-sectional study. *Clinical Neuropsychiatry, 14*(2), 151-158.

Does not investigate relationship between persecutory ideation and wellbeing

Sim, K., Chua, T. H., Chan, Y. H., Mahendran, R., & Chong, S. A. (2006). Psychiatric comorbidity in first episode schizophrenia: A 2 year, longitudinal outcome study. *Journal of Psychiatric Research, 40*(7), 656-663. doi:10.1016/j.jpsychires.2006.06.008

Does not investigate relationship between persecutory ideation and wellbeing

Smits, M. L., Feenstra, D. J., Bales, D. L., de Vos, J., Lucas, Z., Verheul, R., & Luyten, P. (2017). Subtypes of borderline personality disorder patients: A cluster-analytic approach. *Borderline Personality Disorder and Emotion Dysregulation, 4*. doi:10.1186/s40479-017-0066-4

Does not investigate relationship between persecutory ideation and wellbeing

Thoroughgood, C. N., Sawyer, K. B., & Webster, J. R. What lies beneath: How paranoid cognition explains the relations between transgender employees' perceptions of discrimination at work and their job attitudes and wellbeing. *Journal of Vocational Behavior, 103*, 99-112.

Does not investigate relationship between persecutory ideation and wellbeing

Tsai, J., Harpaz-Rotem, H., Pilver, C. E., Wolf, E. J., Hoff, R. A., Levy, K. N., . . . Pietrzak, R. H. (2014). Latent class analysis of personality disorders in adults with posttraumatic stress disorder: Results from the national epidemiologic survey on alcohol and related conditions. *Journal of Clinical Psychiatry, 75*(3), 276-284. doi:10.4088/JCP.13mO8466

Only personality disorder measure

Urbach, M., Brunet-Gouet, E., Bazin, N., Hardy-Baylé, M. C., & Passerieux, C. (2013). Correlations of theory of mind deficits with clinical patterns and quality of life in schizophrenia. *Frontiers in Psychiatry*, *4*, 30.

Does not investigate relationship between persecutory ideation and wellbeing

Valiente, C., Espinosa, R., Villavicencio, P., Cantero, D., & Fuentenebro, F. (2017). Adversity and persecutory ideation: A moderated mediational model. *Psychiatry Research, 258*, 51-58.

No wellbeing measure

Valiente, C., Provencio, M., Espinosa, R., Chaves, C., & Fuentenebro, F. (2011). Predictors of subjective well-being in patients with paranoid symptoms: Is insight necessarily advantageous? *Psychiatry Research, 189*(2), 190-194. doi:10.1016/j.psychres.2011.02.018

Does not investigate relationship between persecutory ideation and wellbeing

Valiente, C., Provencio, M., Espinosa, R., Duque, A., & Everts, F. (2015). Insight in paranoia: The role of experiential avoidance and internalized stigma. *Schizophrenia Research, 164*(1-3), 214-220. doi:10.1016/j.schres.2015.03.010

Does not investigate relationship between paranoia and wellbeing

Waite, F., Diamond, R., Collett, N., Chadwick, E., Bold, E., Teale, A.-L., . . . Freeman, D. (2019). The comments of voices on the appearance of patients with psychosis: 'The voices tell me that I am ugly'. *Bipsych Open, 5*(5). doi:10.1192/bjo.2019.66

Does not investigate relationship between persecutory ideation and wellbeing

Wartelsteiner, F., Mizuno, Y., Fraio-Apor, B., Kemmler, G., Pardeller, S., Sondermann, C., ... & Hofer, A. (2016). Quality of life in stabilized patients with schizophrenia is mainly associated with resilience and self-esteem. *Acta Psychiatrica Scandinavica*, *134*(4), 360-367.

Does not investigate persecutory ideation

Weintraub, M. J., de Mamani, A. W., & Tawfik, S. H. (2015). The interplay among locus of control, sub-clinical psychotic symptoms and psychological well-being in whites and ethnic minorities. *Interamerican Journal of Psychology*, *49*(3), 413-424.

No specific persecutory ideation measure

Wesemann, U., Zimmermann, P., Mahnke, M., Butler, O., Polk, S., & Willmund, G. (2018). Burdens on emergency responders after a terrorist attack in Berlin. *Occupational Medicine, 68*(1), 60-63.

Does not investigate relationship between persecutory ideation and wellbeing

Weyer Jamora, C., Schroeder, S. C., & Ruff, R. M. (2013). Pain and mild traumatic brain injury: The implications of pain severity on emotional and cognitive functioning. *Brain Injury, 27*(10), 1134-1140. doi:10.3109/02699052.2013.804196

Does not investigate relationship between persecutory ideation and wellbeing

Wickham, S., Taylor, P., Shevlin, M., & Bentall, R. P. (2014). The impact of social deprivation on paranoia, hallucinations, mania and depression: The role of discrimination social support, stress and trust. *PloS one*, *9*(8).

No wellbeing measure

Wilberg, T., Karterud, S., Pedersen, G., & Urnes, O. (2009). The impact of avoidant personality disorder on psychosocial impairment is substantial. *Nordic Journal of Psychiatry, 63*(5), 390-396. doi:10.1080/08039480902831322

Does not investigate relationship between persecutory ideation and wellbeing

Witkowska-Luc, B. (2018). Schizophrenia and sense of coherence. *Psychiatria Polska, 52*(2), 217-226. doi:10.12740/PP/OnlineFirst/69697

Does not investigate relationship between persecutory ideation and wellbeing

Xiang, Y. T., Wang, Y., Wang, C. Y., Chiu, H. F., Chen, Q., Chan, S. S., ... & Ungvari, G. S. (2012). Association of insight with sociodemographic and clinical factors, quality of life, and cognition in Chinese patients with schizophrenia. *Comprehensive Psychiatry*, *53*(2), 140-144.

Does not investigate relationship between persecutory ideation and wellbeing

Yilmaz, A., Cumurcu, B. E., Etikan, I., Hasbek, E., & Doruk, S. (2014). The effect of personality disorders on asthma severity and quality of life. *Iranian Journal of Allergy, Asthma and Immunology, 13*(1), 47-54.

Does not investigate relationship between persecutory ideation and wellbeing

Yioti, G., Stefaniotou, M., Ziavrou, I., Kotsis, K., & Hyphantis, T. (2017). Illness perceptions, psychiatric manifestations, and quality of life in patients with inherited retinal dystrophies. *Seminars in Ophthalmology, 32*(4), 428-437. doi:10.3109/08820538.2015.1118136

Does not investigate relationship between persecutory ideation and wellbeing

Appendix E

Ethical approval letter

Central University Research Ethics Committee B

19 December 2019

Dear Dr White

I am pleased to inform you that your application for research ethics approval has been approved. Application details and conditions of approval can be found below. Appendix A contains a list of documents approved by the Committee.

Application Details

Reference:	4899
Project Title:	Exploring the relationship between suspicious beliefs, wellbeing and psychological factors
Principal Investigator/Supervisor:	Dr Ross White
Co-Investigator(s):	Miss Charlotte McAuley-Wilkinson
Lead Student Investigator:	-
Department:	Psychological Sciences
Approval Date:	19/12/2019
Approval Expiry Date:	Five years from the approval date listed above

The application was **APPROVED** subject to the following conditions:

Conditions of approval

- All serious adverse events must be reported to the Committee (ethics@liverpool.ac.uk) in accordance with the procedure for reporting adverse events.
- If you wish to extend the duration of the study beyond the research ethics approval expiry date listed above, a new application should be submitted.
- If you wish to make an amendment to the study, please create and submit an amendment form using the research ethics system.
- If the named Principal Investigator or Supervisor changes, or leaves the employment of the University during the course of this approval, the approval will lapse. Therefore it will be necessary to create and submit an amendment form within the research ethics system.
- It is the responsibility of the Principal Investigator/Supervisor to inform all the investigators of the terms of the approval.

ind regards,

Central University Research Ethics Committee B

ethics@liverpool.ac.uk

0151 794 8290

Appendix - Approved Documents

(Relevant only to amendments involving changes to the study documentation)

The final document set reviewed and approved by the committee is listed below:

Document Type	File Name	Date	Version
Study Proposal/Protocol	Research Protocol	10/09/2019	1
Questionnaire	SOC-13 ENG for use	24/09/2019	1
Advertisement	Study advert Version 2	14/10/2019	2
Questionnaire	Research Questionnaires V2 22nd Nov	22/11/2019	2
Debriefing Material	Debrief information Version 3 - 22nd Nov	22/11/2019	3
Participant Information Sheet	Participant consent form V2 - 22nd Nov	22/11/2019	2

Appendix F

Study advert

UNIVERSITY OF LIVERPOOL

Volunteers needed for a Psychology research study

Title: Exploring the relationship between suspicious beliefs, wellbeing and psychological factors

You are invited to complete a series of questionnaires online. This includes questions about you, how you think about your thoughts, having thoughts of being persecuted by other people (paranoid beliefs) and your wellbeing. You can take part whether you have thoughts of being persecuted or not. Your responses will remain anonymous. The questionnaires will take approximately 20 to 30 minutes to complete.

Eligibility:

- Over the age of 18 years
- Fluent in English
- Have access to the internet

If you have any questions about the study, please contact Charlotte McAuley-Wilkinson by email: cmcauley@liverpool.ac.uk

Further information about the study and the questionnaires can be found at:

https://livpsych.eu.qualtrics.com/jfe/form/SV_0iiQl95bytpQ8Xr

Version :2 Date: 14.10.19

Appendix G

Study information and consent form

Exploring the Relationship between Suspicious Beliefs, Wellbeing and Psychological Factors
Version :3 Date: 22.11.19

You are invited to participate in this research study. It is important to understand why the research is being conducted and what it will involve before you decide to take part. Please read the following information carefully. Please feel free to contact us if you would like more information or if there is anything you do not understand. We would like to stress that you do not have to accept this invitation and should only agree to take part if you would like to.

Thank you for taking the time to read this.

Purpose of the Study

The study aims to examine the relationship between suspicious beliefs and psychological wellbeing in the general population. There is evidence that suspicious beliefs are common but little research so far has looked at the relationship between these beliefs and wellbeing. Numerous psychological factors have been identified which may affect people's experience of suspicious beliefs. The study aims to consider how some of these factors combine to affect wellbeing.

You have been asked if you would like to take part in this study because you have followed the link on the online advert. We hope to include at least 120 people in this study. Anyone over the age of 18 years who can read and write in English and has access to the internet can take part.

If you would like to take part, you can answer the questions on the next page to confirm you meet the eligibility criteria and that you consent to take part. You will then be able to complete the survey. This includes questions about you, how you think about your thoughts, having thoughts of being persecuted by other people (paranoid beliefs) and whether you feel this is deserved and your wellbeing. You can take part whether you have thoughts of being persecuted or not. It is expected that this will take approximately 20 to 30 minutes to complete. After completing the questionnaires, you will have the option to enter a prize draw for 1 of 3 £50 Amazon gift vouchers.

If you decide you do not wish to complete the questionnaires once you have started, you may press the button at the bottom of each page to exit at any time. Please note that any responses provided to the questionnaires prior to exiting are completely anonymised and therefore individual responses cannot be deleted and will be used in the research study.

Potential Risks and Benefits of Participating

It is hoped that the research will increase understanding of the relationship between suspicious beliefs and wellbeing. The questionnaires used in this study have been used in other research studies and have reviewed by members of the Liverpool Experts by Experience (LExE) group alongside the other documents used. However, it is possible that some questions may be found distressing. If you experience any distress or discomfort during this study, you can exit at any time and please inform one of the researchers using the contact details below.

If you would like to access further information or support in relation to the topics included in this study, you can speak to your GP, your mental health worker (if you have one) or access the Mind website at mind.org.uk. The Samaritans are also available 24 hours a day online at Samaritans.org and by telephone on 116 123.

Your Data

The University of Liverpool (ULIV) processes personal data as part of its research and teaching activities in accordance with the lawful basis of 'public task', and in accordance with the University's purpose of "advancing education, learning and research for the public benefit".

Under UK data protection legislation, ULIV acts as the Data Controller for personal data collected as part of the University's research. The Supervisor acts as the Data Processor for this study, and any queries relating to the handling of your personal data can be sent to rgwhite@liverpool.ac.uk.

Further information on how your data will be used can be found in the table below:

How will my data be collected?	Your responses will be saved on this website
How will my data be stored?	It will be stored anonymously on the ULIV's secure server.
How long will my data be stored for?	Data will be kept for 10 years after the end of the study.
What measures are in place to protect the security and confidentiality of my data?	Your anonymous responses will be kept on the ULIV secure server. If you choose to provide your email address for the prize draw, this will kept separately and securely on the Qualtrics website.

Will my data be anonymised?	Yes, you will not be asked to provide any identifying information as part of the study. If you would like to enter the prize draw, you can enter your email address at the end of the study. Your email address will be saved separately from your responses and deleted after the prize draw.
How will my data be used?	Your responses will be analysed alongside other people's responses as part of a university thesis. Publication in a research journal will also be sought.
Who will have access to my data?	Members of the researcher team will have access to your responses.
Will my data be archived for use in other research projects in the future?	No
How will my data be destroyed?	It will be securely destroyed in line with the ULIV data management policy.

If you choose to take part in the study, please click the "next" button at the bottom of this page. You will then see a consent form. Please read this carefully and click "accept" if you are happy to participate in the study. You will then be asked some basic demographic details and a series of questionnaires. Please read the questions carefully and answer as accurately as possible. You can withdraw from the study at any time while on the website by clicking the "exit" button or closing your internet browser. After you have completed the questionnaires, you will have the option of entering the prize draw by providing your email address. This will be kept separately from your responses to the questionnaires.

The study will contribute to Charlotte McAuley-Wilkinson's (Student Investigator) thesis as part of the Doctorate in Clinical Psychology at the ULIV. Publication in a research journal will also be sought.

If you have any further questions or would like a copy of the results, please contact the researcher by email: charlotte.mcauley-wilkinson@liverpool.ac.uk.

If you are unhappy, or if there is a problem, please feel free to let us know by contacting the project supervisor, Dr Ross White, by email: rgwhite@liverpool.ac.uk or by phone: 0151 794 5532.

If you remain unhappy or have a complaint which you feel you cannot come to us with then you should contact the Research Ethics and Integrity Office at ethics@liv.ac.uk. When contacting the ULIV, Research Ethics and Integrity Office, please provide details of the name or description of the study (so that it can be identified), the researcher(s) involved, and the details of the complaint you wish to make.

The ULIV strives to maintain the highest standards of rigour in the processing of your data. However, if you have any concerns about the way in which the University processes your personal data, it is important that you are aware of your right to lodge a complaint with the Information Commissioner's Office by calling 0303 123 1113.

Appendix H

Consent form

Participant consent form

Version number: 2 Date: 22.11.19
Research ethics approval number:

Title of the research project: Exploring the relationship between suspicious beliefs, wellbeing and psychological factors

Name of researcher(s): Charlotte McAuley-Wilkinson, Dr Ross White and Dr Jason McIntyre

Please tick box

1. I confirm that I have read and have understood the information sheet dated 22.11.19 for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
2. I understand that taking part in the study involves completing online questionnaires. ☐
3. I understand that my participation is voluntary and that I am free to stop taking part at any time by discontinuing the questionnaires, without giving any reason and without my rights being affected. ☐
4. I understand that questionnaire responses will be anonymised so I will be unable to withdraw my data once it is submitted. If I exit the study early, information submitted until this point will be anonymised and used. ☐
5. I understand that questionnaire responses will be retained in electronic format on the University of Liverpool secure server until ten years after the completion of the study. The research investigators, University of Liverpool Doctorate in Clinical Psychology staff and external markers will have access to the data. ☐
6. I confirm that I am 18 years of age or older.
7. I agree to take part in the above study. ☐

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Appendix I

Persecution and Deservedness Scale (PADS; Melo et al., 2009)

1) There are times when I worry that others might be plotting against me.

0	1	2	3	4
Certainly False	Possibly False	Unsure	Possibly True	Certainly True

If you've answered 2 or above to the last question, please answer to the following question:

1.1) Do you feel like you deserve others to plot against you?

0	1	2	3	4
Not At All	Possibly Not	Unsure	Possibly	Very Much

2) I often find it hard to think of anything other than the negative ideas others have about me.

0	1	2	3	4
Certainly False	Possibly False	Unsure	Possibly True	Certainly True

If you've answered 2 or above to the last question, please answer to the following question:

2.1) Do you feel like you deserve others to plot against you?

0	1	2	3	4
Not At All	Possibly Not	Unsure	Possibly	Very Much

3) My friends/others often tell me to relax and stop worrying about being deceived or harmed.

0	1	2	3	4
Certainly False	Possibly False	Unsure	Possibly True	Certainly True

If you've answered 2 or above to the last question, please answer to the following question:

3.1) Do you feel like you deserve being deceived or harmed?

0	1	2	3	4
Not At All	Possibly Not	Unsure	Possibly	Very Much

4) Every time I meet someone for the first time, I'm afraid they've already heard bad things about me.

0	1	2	3	4
Certainly False	Possibly False	Unsure	Possibly True	Certainly True

If you've answered 2 or above to the last question, please answer to the following question:

4.1) Do you feel like you deserve to have people hearing bad things about you?

0	1	2	3	4
Not At All	Possibly Not	Unsure	Possibly	Very Much

5) I'm often suspicious of other people's intentions towards me.

0	1	2	3	4
Certainly False	Possibly False	Unsure	Possibly True	Certainly True

If you've answered 2 or above to the last question, please answer to the following question:

5.1) Do you feel like you deserve to have people hearing bad things about you?

0	1	2	3	4
Not At All	Possibly Not	Unsure	Possibly	Very Much

6) Sometimes, I just know that people are talking critically about me.

0	1	2	3	4
Certainly False	Possibly False	Unsure	Possibly True	Certainly True

If you've answered 2 or above to the last question, please answer to the following question:

6.1) Do you feel like you deserve people to talk critically about you?

0	1	2	3	4
Not At All	Possibly Not	Unsure	Possibly	Very Much

7) There are people who think of me as a bad person.

0	1	2	3	4
Certainly False	Possibly False	Unsure	Possibly True	Certainly True

If you've answered 2 or above to the last question, please answer to the following question:

7.1) Do you feel like you deserve people to think of you as a bad person?

0	1	2	3	4
Not At All	Possibly Not	Unsure	Possibly	Very Much

8) People will almost certainly lie to me.

0	1	2	3	4
Certainly False	Possibly False	Unsure	Possibly True	Certainly True

If you've answered 2 or above to the last question, please answer to the following question:

8.1) Do you feel like you deserve people to lie to you?

0	1	2	3	4
Not At All	Possibly Not	Unsure	Possibly	Very Much

9) I believe that some people want to hurt me deliberately.

0	1	2	3	4
Certainly False	Possibly False	Unsure	Possibly True	Certainly True

If you've answered 2 or above to the last question, please answer to the following question:

9.1) Do you feel like you deserve people to hurt you deliberately?

0	1	2	3	4
Not At All	Possibly Not	Unsure	Possibly	Very Much

10) You should only trust yourself.

0	1	2	3	4
Certainly False	Possibly False	Unsure	Possibly True	Certainly True

If you've answered 2 or above to the last question, please answer to the following question:

10.1) Do you feel like you deserve to have no one you can trust?

0	1	2	3	4
Not At All	Possibly Not	Unsure	Possibly	Very Much

Appendix J

Sense of Coherence Scale (SOC-13; Antonovsky, 1993)

Orientation to life questionnaire

Here is a series of questions relating to various aspects of our lives. Each question has seven possible answers. Please mark the number which expresses your answer, with numbers 1 to 7. If the words under 1 are right for you, circle 1; if the words under 7 are right for you, circle 7. If you feel differently, circle the number which best expresses your feeling. Please give only one answer to each question.

1. Do you have the feeling that you don't really care about what goes on around you?

1	2	3	4	5	6	7
Very seldom or never						very often

2. Has it happened in the past that you were surprised by the behaviour of people whom you thought you knew well?

1	2	3	4	5	6	7
Never Happened						always happened

3. Has it happened that people whom you counted on disappointed you?

1	2	3	4	5	6	7
Never happened						always happened

4. Until now your life has had:

1	2	3	4	5	6	7
No clear goals or						very clear goals and purpose

5. Do you have the feeling that you're being treated unfairly?

1	2	3	4	5	6	7
Very often						very seldom or never

6. Do you have the feeling that you are in an unfamiliar situation and don't know what to do?

1	2	3	4	5	6	7
Very often						very seldom or never

7. Doing the things you do everyday is:

1	2	3	4	5	6	7
A source of deep pleasure or satisfaction						a source of pain and boredom

8. Do you have very mixed-up feelings and ideas?

1	2	3	4	5	6	7
Very often						very seldom or never

9. Does it happen that you have feelings inside you would rather not feel?

1	2	3	4	5	6	7
Very often						very seldom or never

10. Many people – even those with a strong character – sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past?

1	2	3	4	5	6	7
Never						very often

11. When something happened, have you generally found that:

1	2	3	4	5	6	7
You overestimated or underestimated its importance						you saw things in the right proportion

12. How often do you have the feeling that there's little meaning in the things you do in your daily life?

1	2	3	4	5	6	7
Very often						very seldom or never

13. How often do you have feelings that you're not sure you can keep under control?

1	2	3	4	5	6	7
Very often						very seldom

Appendix K

State Cognitive Fusion Questionnaire (SCFQ; Bolderston et al., 2018)

Below you will find a list of statements. Please rate how true each statement is for you at this moment, by circling a number next to it. Use the scale below to make your choice.

1. My thoughts are causing me distress or emotional pain

1	2	3	4	5	6	7
Completely Untrue	Very Untrue	Somewhat Untrue	Neither True nor Untrue	Somewhat True	Very True	Completely True

2. I am so caught up in my thoughts that I don't know what to do

1	2	3	4	5	6	7
Completely Untrue	Very Untrue	Somewhat Untrue	Neither True nor Untrue	Somewhat True	Very True	Completely True

3. I am over-analysing the situation to the point where it's unhelpful to me

1	2	3	4	5	6	7
Completely Untrue	Very Untrue	Somewhat Untrue	Neither True nor Untrue	Somewhat True	Very True	Completely True

4. I am struggling with my thoughts

1	2	3	4	5	6	7
Completely Untrue	Very Untrue	Somewhat Untrue	Neither True nor Untrue	Somewhat True	Very True	Completely True

5. I am upset with myself for having certain thoughts

1	2	3	4	5	6	7
Completely Untrue	Very Untrue	Somewhat Untrue	Neither True nor Untrue	Somewhat True	Very True	Completely True

6. I am very entangled in my thoughts

1	2	3	4	5	6	7
Completely Untrue	Very Untrue	Somewhat Untrue	Neither True nor Untrue	Somewhat True	Very True	Completely True

7. It's such a struggle to let go of upsetting thoughts even though I know that letting go would be helpful

1	2	3	4	5	6	7
Completely Untrue	Very Untrue	Somewhat Untrue	Neither True nor Untrue	Somewhat True	Very True	Completely True

Appendix L

Mental Health Continuum Short Form (MHC-SF; Keyes 2006)

During the past month, how often did you feel...

1. happy

1	2	3	4	5	6
Never	Once or twice a month	About once a week	2 or 3 times a week	Almost everyday	Every day

2. interested in life

1	2	3	4	5	6
Never	Once or twice a month	About once a week	2 or 3 times a week	Almost everyday	Every day

3. satisfied

1	2	3	4	5	6
Never	Once or twice a month	About once a week	2 or 3 times a week	Almost everyday	Every day

4. that you had something important to contribute to society

1	2	3	4	5	6
Never	Once or twice a month	About once a week	2 or 3 times a week	Almost everyday	Every day

5. that you belonged to a community (like a social group, or your neighborhood)

1	2	3	4	5	6
Never	Once or twice a month	About once a week	2 or 3 times a week	Almost everyday	Every day

6. that our society is becoming a better place for people like you

1	2	3	4	5	6
Never	Once or twice a month	About once a week	2 or 3 times a week	Almost everyday	Every day

7. that people are basically good

1	2	3	4	5	6
Never	Once or twice a month	About once a week	2 or 3 times a week	Almost everyday	Every day

8. that the way our society works makes sense to you

1	2	3	4	5	6
Never	Once or twice a month	About once a week	2 or 3 times a week	Almost everyday	Every day

9. that you liked most parts of your personality

1	2	3	4	5	6
Never	Once or twice a month	About once a week	2 or 3 times a week	Almost everyday	Every day

10. good at managing the responsibilities of your daily life

1	2	3	4	5	6
Never	Once or twice a month	About once a week	2 or 3 times a week	Almost everyday	Every day

11. that you had warm and trusting relationships with others

1	2	3	4	5	6
Never	Once or twice a month	About once a week	2 or 3 times a week	Almost everyday	Every day

12. that you had experiences that challenged you to grow and become a better person

1	2	3	4	5	6
Never	Once or twice a month	About once a week	2 or 3 times a week	Almost everyday	Every day

13. confident to think or express your own ideas and opinions

1	2	3	4	5	6
Never	Once or twice a month	About once a week	2 or 3 times a week	Almost everyday	Every day

14. that your life has a sense of direction or meaning to it

1	2	3	4	5	6
Never	Once or twice a month	About once a week	2 or 3 times a week	Almost everyday	Every day